

**WHEN AND WHY PERFORMANCE-PROVE GOAL ORIENTATION PREDICTS  
TASK PERFORMANCE AND GOAL EXPECTANCY: THE ROLES OF GOAL  
CONTENT, SELF-EFFICACY, AND GOAL STRUCTURE**

A Dissertation

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## **ABSTRACT**

This study aimed to determine when and why performance-prove goal orientation (PPGO) relates to a) task performance and b) goal expectancy. Goal content was also proposed to be a mediator of the PPGO-task performance relationship. Additionally, task-specific self-efficacy (TSE) was proposed to moderate the relationship between PPGO and task performance such that as TSE increased so would the magnitude of the positive relationship between PPGO and task performance. Second, goal structure was proposed to moderate the relationship between PPGO and task performance such that the positive relationship between PPGO and task performance was stronger when individuals are engaged in a task with a competitive goal structure. In an attempt to integrate goal orientation and goal setting theory, the current study examined the relationship between PPGO and goal expectancy. This relationship was expected to be moderated by goal structure such that the relationship between PPGO and goal expectancy was positive in a competitive goal structure but not in a non-competitive goal structure. Finally, it was proposed that the previously observed null relationships between PPGO and performance have been due to the fact that many studies did not utilize measures that take into account the bifurcation of the performance goal orientation construct into separate dimensions of PPGO and performance-avoid goal orientation (PAGO). Correspondingly, exploratory analyses were conducted to examine the moderator effects proposed in this study. The expectation was that the moderator effects proposed would differ based on using a PPGO measure vs. a PAGO measure.

One hundred nine undergraduate research methods students completed at least one item generation task (IGT) for extra credit prior to each of four examinations throughout the semester. Each participant had the opportunity to complete the IGT in the competitive condition twice and in the noncompetitive condition twice. Hierarchical linear modeling (HLM) was used to test the study hypotheses. There was support for a direct, positive relationship between PPGO and task performance controlling for goal structure. There was no support for a PPGO-prove goal content relationship, nor a prove goal content-task performance relationship; therefore, goal content did not mediate the PPGO-task performance relationship. None of the substantive PPGO-task performance moderator hypotheses were supported that included task performance as the dependent variable. The results did reveal that goal structure moderated the relationship between PPGO and goal expectancy. Furthermore, exploratory analyses indicated there were some differential effects observed when examining PAGO instead of PPGO in the moderator analyses involving goal expectancy. These results provide additional support for the separation of the PPGO and PAGO constructs. Study limitations, implications, and future research directions are discussed.

## **DEDICATION**

To my Mother who is the kindest most caring person I will ever know.

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## INTRODUCTION

It has been demonstrated in the industrial/organizational (I/O) and educational psychology research literatures that achievement goal theory provides an explanation for some of the variability in behavior in an achievement-related context. The central construct in achievement goal theory is goal orientation (GO) which has been defined as the *disposition* to set goals that will allow one to develop and/or demonstrate competence in achievement settings (Dweck, 1986; Farr, Hofmann, & Ringenbach, 1993; Payne, Youngcourt, & Beaubien, 2007; VandeWalle, 1996, 1997). Initially, two types of achievement goals were defined (Ames, 1992; Dweck, 1986). Dweck (1986) proposed children either adopt learning goals (increase competence) or performance goals (demonstrate competence or avoid demonstrating a lack of competence). She found learning goals were associated with an adaptive, mastery-oriented behavior pattern of problem solving which is “characterized by challenge seeking and persistence in the face of obstacles” (Dweck, 1986, p. 1040). Conversely, performance goals were associated with maladaptive behavioral patterns (lower motivation characterized by behaviors such as avoiding challenge/low persistence in the face of obstacles) when children perceived their current skill level was low (Elliott & Dweck, 1988). Interestingly, when performance goals were emphasized *and* current perceived skill level was high, a mastery orientation was observed. Thus, the effect of performance goals on behavior appeared to depend on perceptions of skill level.

Dweck’s research inspired many studies in areas such as social psychology where researchers manipulated achievement goals (e.g., Wood & Bandura, 1989). Shortly after,

a shift began where researchers started to focus on dispositional goal orientation within the achievement goal theory framework. In 1993, Farr et al. proposed GO has implications for a number of I/O psychology topics such as goal setting, performance feedback, training, development, individual work role innovation, and individual continuous improvement. Since Farr et al. (1993) discussed goals from an individual differences perspective they used the term “goal orientation” more so than previous GO researchers (cf. Ames, 1992; Nicholls, 1984). A number of studies were subsequently conducted in the I/O area that examined GO as a stable dispositional trait or a situationally driven quasi-trait (e.g., Brett & Atwater, 2001; Brett & VandeWalle, 1999; Button, Mathieu, & Zajac, 1996; Colquitt & Simmering, 1998; Ford, Smith, Weissbein, Gully, & Salas, 1998; Kozlowski, Gully, Brown, Salas, Smith, & Nason, 2001; Phillips & Gully, 1997; VandeWalle, Brown, Cron, & Slocum, 1999; VandeWalle, Cron, & Slocum, 2001).

Dweck (1986) originally conceptualized learning and performance goals on one continuum, but Button et al. (1996) provided evidence for the bifurcation of these goals into separate dimensions thus proposing an individual could have a high learning goal orientation (LGO) and a high performance goal orientation (PGO). Later, VandeWalle (1996, 1997) and Elliot (1994) advocated for dividing performance goals into two dimensions: *prove and avoid*. Subsequently, a 2x2 framework in which learning and performance goals were each divided into prove and avoid goals was proposed and empirically supported (Elliot, 1999; Elliot & McGregor, 2001).

The focus of this study is on performance-prove goal orientation (PPGO) or “the desire to prove one’s competence and to gain favorable judgments about it” (VandeWalle, 1996, p. 8) and the conditions in which it leads to higher levels of performance. Elliot

(2005) similarly defined his performance-approach goals as those where the focus is on attaining normative competence. Studies examining the relationship between PPGO and task performance have yielded both positive (e.g., Ford et al., 1998) and negative relationships (e.g., Kozlowski et al., 2001). Given these findings, it was not surprising that one of the most comprehensive meta-analyses revealed virtually no relationship between PPGO and task performance (Payne et al., 2007).

The problem with these findings is they are contrary to Atkinson's (1964) achievement motive theory. According to Atkinson, there is a direct, positive relationship between the motivation to succeed and task performance. High PPGO individuals are expected to have a high motivation to succeed. Therefore, PPGO is theoretically expected to positively relate to task performance (Atkinson, 1964; see also VandeWalle, 1996).

Given the theoretical foundation for the PPGO-task performance relationship, the purpose of the current study is to determine *when* and *why* PPGO is positively related to task performance. This study responds to calls for research to examine potential moderators of the PPGO-performance relationship (e.g., Payne et al., 2007; VandeWalle et al., 2001) and goal orientation researchers' recommendations that future PGO-performance research to incorporate the PPGO/PAGO distinction (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; VandeWalle et al., 2001). There are five key propositions for this study. First, consistent with integrated theories of personality and motivation (e.g., Kanfer, 1990) such as goal hierarchy theory (e.g., Cropanzano, James, & Citra, 1993), it is proposed that performance prove *goals* (content, not orientation) mediate the relationship between PPGO and task performance (which is expected to be significant when using a more sound measure of PPGO). Second, building on Dweck's

(1986) and Nicholls' (1984) original theorizing on PGO, it is proposed that task-specific self-efficacy (TSE) moderates the relationship between PPGO and task performance, such that the relationship is stronger when TSE is higher. Third, based on the concepts of self-referenced or normative competence developed either implicitly (e.g., Dweck, 1986) or explicitly (e.g., Elliot, 2005; Nicholls, 1984), it is proposed that the relationship between PPGO and task performance depends on goal structure (competitive vs. non-competitive) such that the relationship is stronger and positive in a competitive goal structure. Fourth, integrating achievement goal theory and goal setting theory, it is proposed that goal structure also moderates the relationship between PPGO and goal expectancy. Finally, previous conceptual and empirical limitations of studies examining the PPGO-task performance relationship are noted, highlighting improvements made in the current study. By doing so, this study gathers additional empirical evidence for the two-dimensional model of PGO which includes the PPGO and PAGO dimensions.

### **Goal Orientation**

The development of the GO construct can be traced back to James Eison (1979), Carol Dweck (1972, 1986), John Nicholls (1984) and their respective colleagues. After initially observing helpless response patterns in children, Dweck (1972) sought to explain why children with high ability responded in a maladaptive way when faced with challenges. According to Dweck (1986), individuals' implicit theories of ability drive their motivation to adopt either learning or performance goals. Individuals who believe that their ability is malleable and can be developed over time are said to have an incremental theory of ability and are likely to adopt learning goals. These learning goals lead to an adaptive ("mastery-oriented") behavioral response pattern whereby individuals

are more likely to seek challenges and persist when facing the prospect of failure. This adaptive pattern is believed to result from learning goals regardless of confidence in ability. In contrast, individuals who believe that ability is fixed are said to have an entity theory of ability and are more likely to adopt performance goals, seek favorable judgments of competence, and/or avoid negative evaluations of competence. When confidence in ability is low and performance goals are adopted, individuals are expected to develop a maladaptive (“helpless”) behavioral response pattern in which they avoid challenges and give up more easily in the face of obstacles. As noted earlier, Button et al. (1996) argued for a two-dimensional goal orientation conceptualization (LGO and PGO rather than a unidimensional construct) stating that it is possible to have multiple orientations toward the same task.

John Nicholls (1984) also contributed to the development of the current conceptualization of the GO construct. According to Nicholls, an individual can have one of two conceptions of ability that are formed based on how one evaluates his/her current performance (Nicholls, 1984). *Task-involved* individuals form their conception of ability by evaluating “one’s own perceived mastery, understanding, or knowledge” (Nicholls, 1984, p. 329) and do not form conceptions of ability by making social comparisons. Nicholls stated that task-involvement “requires a *less* social or external perspective on the self” (Nicholls, 1984, p. 330, emphasis added) vs. a *more* externally referenced perspective on the self. Conversely, *ego-involved* individuals form conceptions of ability by comparing their performance to the performance of others. In other words, task-involved individuals’ conceptions of ability are self-referenced and ego-involved individuals’ conceptions of ability are externally referenced. According to Elliot (2005),

these were fundamental components of Nicholls' (1984) achievement goal construct and were not antecedents to the construct.

Nicholls' conceptions of ability are similar to Dweck's (1986) conceptualization of GO in that task involvement and LGO involve making judgments about one's competence based on internal performance standards. Likewise, ego involvement and PGO involve comparing one's performance with others. A task-involved individual is more likely to define success in self-referent terms, comparing current performance to past performance. The ego-involved individual is more likely to use an external referent to define success, comparing current performance to the performance of another engaged in the same task at the same time. Although from slightly different theoretical perspectives, Nicholls (1984) and Dweck (1986) were the main early achievement goal theory contributors. Their primary contribution was the use of self-referenced vs. normative-referenced goals, aims, outcomes, and competence. In fact, Elliot (2005) argued that there was essentially no meaningful difference in their respective achievement goal constructs. He observed seven major points of convergence and only two differences. The first difference was Nicholls postulated that children do not develop the differentiated conception of ability until 12 years of age. The other difference is that Dweck conceptualized implicit theory of ability as an *antecedent* to her achievement goal construct and Nicholls described it as a *characteristic* of his achievement goal construct. Elliot (2005) also noted that Ames and Archer (1987, 1988) were the first to argue for the convergence of all the achievement goal theorists' constructs.

In more recent investigations of the dimensionality of GO, Elliot (1994) and Vandewalle (1996, 1997) proposed the performance goal orientation dimension consists

of two dimensions. The theoretical basis for the division of PGO resides in Atkinson's (1964) achievement motivation theory. Atkinson proposed the basic achievement motives are either to seek success or avoid failure. These motives are relevant when an individual knows his/her performance will be evaluated against a self-imposed or external standard of excellence and the result of his/her behavior will either be success or failure. The two motives often work in opposition to one another when trying to predict when an individual will put forth effort to do well in an achievement context. The implication is that if one has equal motivation to seek success and avoid failure, it cannot be predicted what level of performance will be obtained without knowing about situational characteristics like external rewards (Atkinson, 1964). However, performance levels become much more predictable the further away each motive moves from the other. If the motive to seek success is relatively strong and the motive to avoid failure is weak, then performance levels should be higher than if the opposite is true. Interestingly, Dweck's initial (1986) characterization of performance goals as *either* seeking favorable judgments *or* avoiding negative judgments about one's ability aligns with the two motives Atkinson described. Accordingly, Elliot (1994) and VandeWalle (1996, 1997) each advocated dividing PGO into two dimensions: prove and avoid.

Separately, Elliot (1994) and VandeWalle (1996, 1997) developed two-dimensional measures of PGO. Elliot and his colleagues refer to the two performance dimensions as "performance-approach" and "performance-avoid" goals, whereas VandeWalle labels them "performance-prove" and "performance-avoid" goal orientation. Elliot and Harackiewicz (1996) found support for the approach and avoid dimensions by applying Atkinson's (1964) conceptualization of achievement motives to two separate



performance goal manipulations. One was equivalent to seeking success (prove) and the other to avoiding failure (avoid) and both differentially predicted outcomes in the study. VandeWalle (1996, 1997) also found different correlates of PPGO and PAGO (e.g., openness, optimism, and self-esteem) and demonstrated the three-factor model (LGO, PPGO, and PAGO) fit his data better than a two-factor model (LGO and PGO).

VandeWalle's (1996, 1997) labels and instrument (1996) are used in this study for two primary reasons. First, VandeWalle has always treated GO as an individual difference variable, whereas Elliot and his colleagues focus more on malleable goals rather than trait-like individual differences. Second, VandeWalle's measure is much more embedded in the extant I/O psychology literature. In addition to the theoretical and empirical justification for bifurcating performance GO for this study, there are a number of specific problems with past empirical studies discussed in the next section.

### **Review of Past Problems with GO Studies: A Measurement Moderator**

Payne et al. (2007) estimated the population correlation between PPGO and task performance to be practically nonexistent ( $-.01$ ). Each of the individual studies ( $k = 24$ ) contributing to the population correlation was systematically reviewed in order to identify any trends with regards to study characteristics.

One of the first observations concerned the measurement of PPGO. The majority of the studies ( $k = 20$ ) used a two-dimensional measure of GO in which PGO is not divided into prove and avoid dimensions. Most of *these* studies used the Button et al. (1996) two-dimensional measure ( $k = 16$ ). The correlations between PPGO and task performance in these studies ranged from  $-.19$  (Ford et al., 1998) to  $.19$  (Kozlowski et al.,

2001) and the majority of them were not significant. Four additional studies adopting the two-dimensional operationalization of GO yielded correlations from .06 to .16.

One might expect that operationalizations of PGO included both PPGO and PAGO items. However, all of the PGO measures in the Payne et al. (2007) meta-analysis were categorized as PPGO. This is potentially problematic as the mix of PPGO and PAGO items in these measures varies substantially. For example, Button et al.'s (1996) measure included "I'm happiest at work when I perform tasks on which I know that I won't make any errors," and "I feel smart when I do something without making any mistakes." These two items focus on errors and mistakes (failures) whereas, the item, "I like to work on tasks that I have done well on in the past," focuses on successes. Compare these items with one of VandeWalle's (1997) prove items, "I prefer to work on projects where I can prove my ability to others." This item is more clearly an indicator of PPGO than any of Button et al.'s (1996) other PGO items. This is likely contributing to the mixed results when a two-dimensional measure of PGO is used. Therefore, when PPGO and PAGO are operationalized as separate dimensions, a different pattern of results is expected.

Of the four studies that directly measured PPGO, all of them used VandeWalle's (1997) three-dimensional GO measure. Two studies produced significant, positive relationships between PPGO and performance ( $r = .25$ ,  $N = 87$ ; Heimbeck, Frese, Sonnentag, & Keith, 2003;  $r = .22$ ,  $N = 100$ ; Hendricks & Payne, 2007) and two of them produced non-significant results (Brett & VandeWalle, 1999; Seijts, Latham, Tasa, & Latham, 2004). The first of these studies was conducted in a training performance context. Although the overall correlation between PPGO and performance was non-significant, there was a significant, positive relationship between PPGO and two types of

goals (skill refinement and positive comparison) which were subsequently related to performance. Thus, the influence of PPGO on performance may be indirect through performance-prove goals.

The second PPGO-performance study that produced non-significant results was conducted by Seijts et al. (2004) which also focused on GO and goal content. They examined the interaction between learning, performance, and “do your best” assigned goals (three conditions) and each of the three GO dimensions. The authors stated in the text of their article that the relationship between PPGO and end-of-task performance (Time 3) was non-significant in the learning and performance goal conditions (zero-order correlations were not reported). However, PPGO was negatively related to performance in the “do your best” condition ( $r = -.36, n = 59$ ). This could lend credence to the assertion that it is important for those individuals with a high prove orientation to set or be assigned prove goals. The sample correlation between PPGO and task performance (sample weighted mean correlation,  $r_w = -.09, N = 170$ ) used in the Payne et al. (2007) meta-analysis was an aggregation across all three conditions (learning vs. performance vs. “do your best”).

One criticism of Seijts et al.’s (2004) study is the level of task complexity may have been too high. The authors admit that their Cellular Industry Business Game where the participant plays the role of a Chief Executive Officer and is the sole decision maker for the company over 13 decision periods is a relatively complex task. They argued this task may have been too complex based on the fact that the individuals assigned “do your best” goals outperformed individuals who were assigned performance goals. This observation is contrary to a long history of research supporting the superiority of specific,

challenging goals over vague goals (see Locke & Latham, 2002). They further speculated that having little time to learn the task and practice any performance routines “relocated the focus of the experiment from primarily motivation to ability” (p. 235). The authors note that 1) a number of studies of complex skill acquisition suggest that developing learning strategies rather than focusing on performance goals are much more valuable in the initial phases of learning (e.g., Kanfer & Ackerman, 1989; Seijts & Latham, 2001; Winters & Latham, 1996) and 2) there is likely a strong, interactive effect between motivation and cognitive ability for this particular task (see Kanfer & Ackerman, 1989).

In summary, most of the studies examined for the PPGO-task performance relationship in the Payne et al. (2007) meta-analysis used the two-dimensional conceptualization and operationalization of GO and did not directly measure PPGO. This is a substantial limitation in the GO-performance literature. It is expected that by utilizing the two-dimensional operationalization of PGO that more meaningful and theoretically relevant results will emerge from the current study. This is consistent with Harackiewicz et al.’s (2002) assertion that a more theoretically sound approach for measuring performance goals is to utilize a measure that reflects the two-dimensional performance goal domain. They further argued, “. . . it is (also) important to maintain distinctions between constructs when they reflect important and functional differences” (p. 638).

Building on achievement goal theory and these previous empirical findings, it is proposed that since a sound measure of PPGO will be used in this study a number of more meaningful results will emerge beginning with a direct, positive relationship between PPGO and task performance.

H1: PPGO will be positively related to task performance

In order to better explain the influence of PPGO on performance, each of the following need to be considered: goal content, goal hierarchy theory, and goal setting theory. Very few researchers have attempted to integrate these theories. One reason for the lack of integration is that GO researchers tend to focus on ability, individual differences, and complex tasks, whereas goal setting researchers focus on motivation, situational characteristics, and moderately difficult tasks (Seijts, et al., 2004). Additionally, Seijts et al. noted that the goal setting literature focuses on the level and specificity of a goal, whereas the GO literature focuses on the content and desired outcome intended with the goal. Accordingly, each of these topics is discussed in turn.

### **Goal Content**

It seems that one of the assumptions made in the GO literature is that an individual's dominant goal orientation will determine which type of goals he/she sets. For example, if one has high PPGO, low LGO, and low PAGO, then given the opportunity to set a goal, the type of goal is more likely to be a performance-prove goal (e.g., My goal is to be in the top 10% in sales volume this quarter) rather than a learning goal (e.g., My goal is to learn new strategies to make sales) or performance-avoid goal (e.g., My goal is to avoid being in the bottom 20% in new customer contacts this quarter). Whether an individual sets a learning goal, performance-prove, or performance-avoid goal refers to the *content* of the goal (see Austin & Vancouver, 1996 for a discussion of goal content). Unfortunately, a single goal content taxonomy has not been universally accepted in the goal setting and related literatures. Austin and Vancouver (1996) identified a few researchers who have attempted to explicitly research goal content (e.g., Ford & Nichols, 1987). They argue that this lack of research is likely due to the content of goals usually

being so idiographic that it is difficult to systematically develop a general goal content taxonomy.

Very few researchers have examined both GO and goal content in the same study. One exception is Brett and VandeWalle's (1999) study examining dispositional LGO, PPGO, PAGO, and goal content. The foundation of Brett and VandeWalle's arguments is based on goal hierarchy theory proposed by Cropanzano et al. (1993). Goal hierarchy theory suggests that each individual has a number of lower level goals such as those involving task performance that are influenced by higher order goals such as career aspirations. Brett and VandeWalle claimed that an individual's goal orientation is similar to these higher order goals in that they tend to be relatively stable over time and influence specific goals from situation to situation (Kanfer, 1990). Accordingly, Brett and VandeWalle proposed that goal orientation is likely to influence the content of goals set by individuals. Consistent with past and current theorizing on goal orientation, they predicted individuals with a high PPGO will assess their performance relative to the performance of others performing the same task. This in turn will lead the individuals to set goals in terms of positive comparisons (e.g., outperform fellow MBA students on a task). Consistent with their proposition, they found that individuals with high PPGO were more likely to set goals to refine their skills as opposed to develop new skills. Similarly, self-set goals are the focus in this study.

### **Goal Setting Theory**

Goal setting theory is one of the most robust psychological theories of motivation in the past 45 years (Locke & Latham, 1990). According to this theory, setting specific, proximal (nearness of desired outcome), and difficult, yet obtainable goals will lead to

higher performance levels than setting “do your best” goals. This hypothesis has been supported in a large number of empirical studies (Locke & Latham, 1990). The reason for the success of specific, proximal, and difficult goals is that goals lead individuals to focus on goal-relevant activities including effort, persistence, arousal, discovery, and use of task-relevant knowledge. Additionally, goal commitment moderates the relationship between goal difficulty level and performance such that as commitment to the goal increases, so does the strength of relationship between goal difficulty level and task performance (Hollenbeck & Klein, 1987; Locke & Latham, 1990; see Figure 1).

Hollenbeck and Klein (1987) extended goal setting theory to include two antecedents of goal commitment: (1) expectancy of goal attainment and (2) attractiveness of goal attainment (valence). Building on Vroom’s (1964) valence-instrumentality-expectancy theory of motivation, expectancy of goal attainment is defined as the expectation that effort will lead to goal attainment. Previous meta-analytic research supports positive relationships between goal expectancy and goal commitment, as well as goal attractiveness and goal commitment (Klein, Wesson, Hollenbeck, & Alge, 1999).

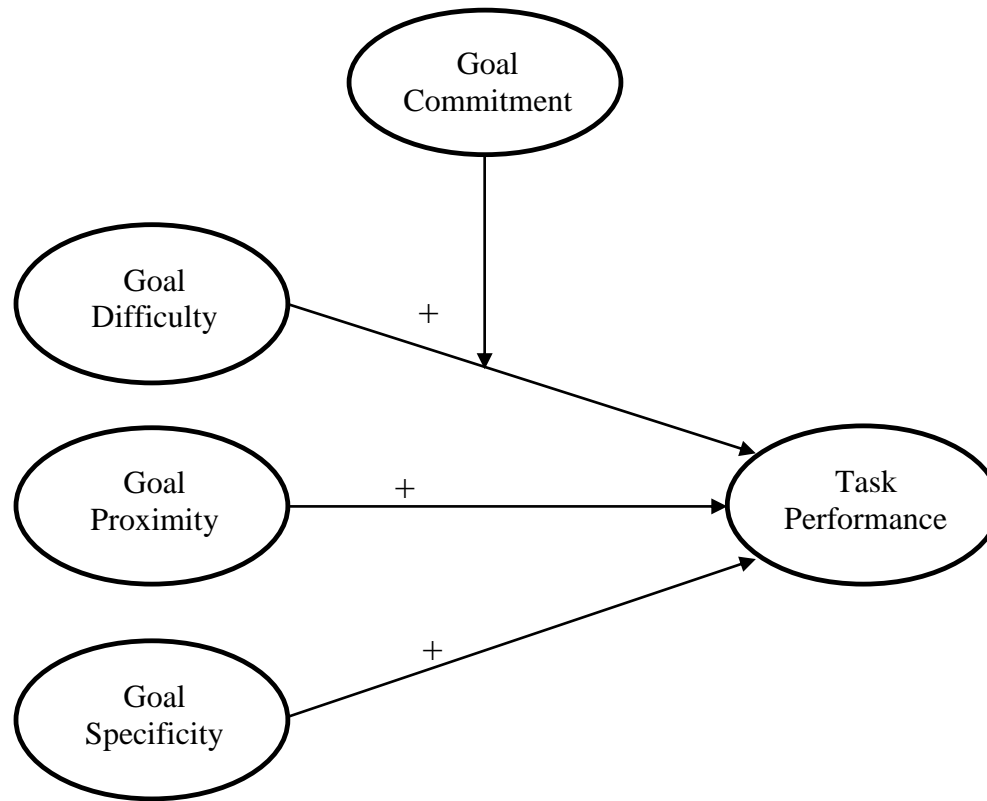


Figure 1. *Model of Traditional Goal Setting Theory*



Self-efficacy (Bandura, 1982, 1997) also plays an important role in traditional goal setting behavior. In general, self-efficacy is “people’s beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives” (Bandura, 1991, p. 257). Self-efficacy is often examined with regard to a specific task (e.g., “an individual’s estimate of his or her capability of performing a specific set of actions required to deal with task situations” [Wood & Locke, 1987; p. 1014]). Accordingly, the self-efficacy construct is referred to as task-specific in this study; it is a belief about how well one can perform a given task. According to Locke and Latham (2002), self-efficacy enhances goal commitment, because those who believe they are likely to perform well on a task are more likely to be committed to the goal. Wofford, Goodwin, and Premack (1992) found support for a positive relationship between self-efficacy and goal commitment. In addition, self-efficacy is directly associated with goal difficulty when setting self-set goals (Phillips & Gully, 1997). Indeed, Locke and Latham (1990) argued that individuals with high levels of self-efficacy are more likely to set higher performance standards than individuals with low levels of self-efficacy. An extended goal setting model is depicted in Figure 2.

Seijts et al. (2004) attempted to integrate the GO and goal setting literatures. They pointed out it is possible to set a difficult, obtainable learning goal, performance goal, or both. They defined a performance goal as, “obtaining a specific level of performance” (p. 229). Unfortunately, they did not distinguish between performance-prove and performance-avoid goals.

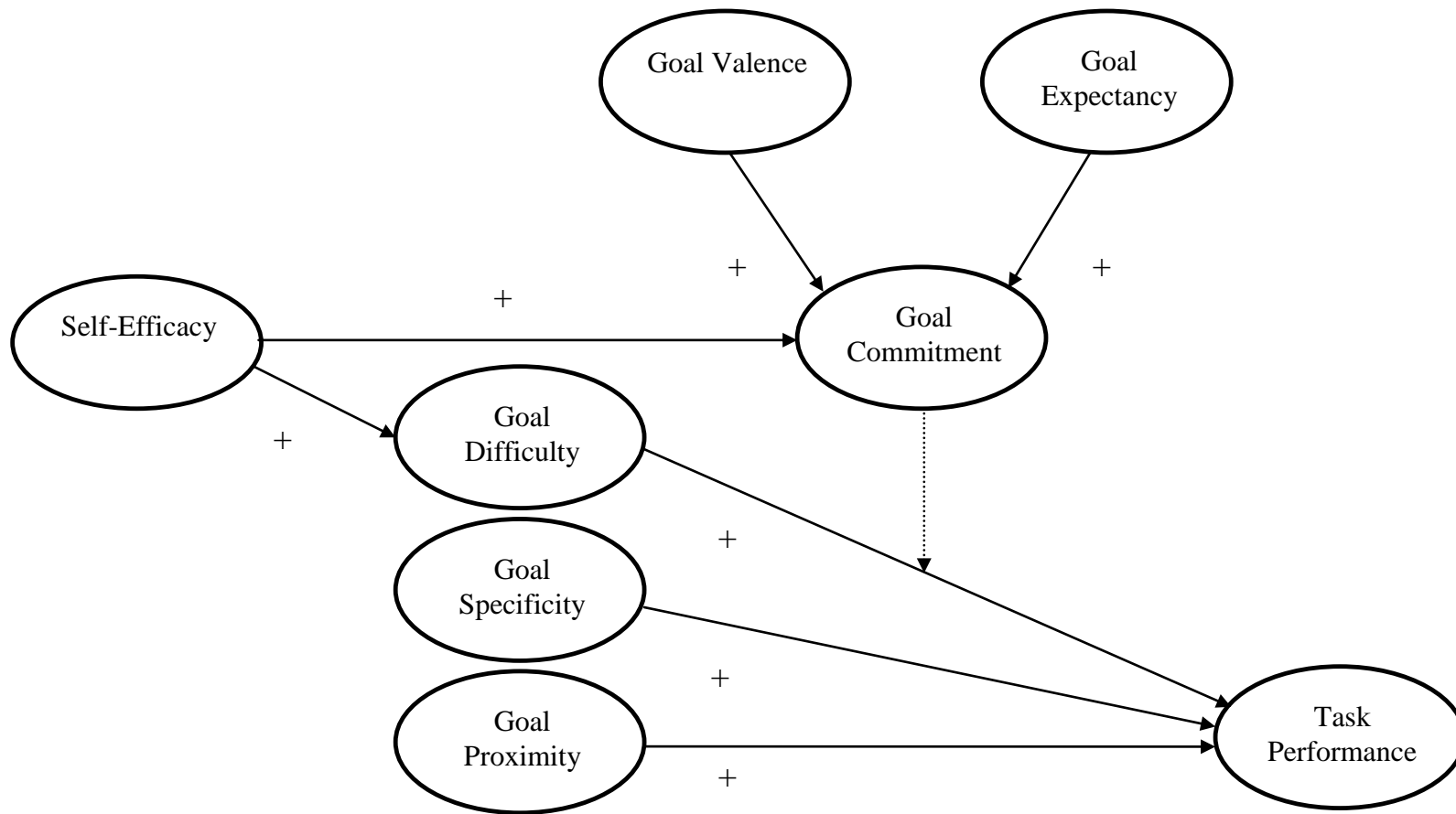


Figure 2. *Extended Model of Goal Setting Theory*

Again, a performance-prove goal orientation would include “the desire to prove one’s competence and to gain favorable judgments about it,” whereas a performance avoid goal orientation would include “the desire to avoid the disproving of one’s competence and to avoid negative judgments about it” (VandeWalle, 1996, p. 8). Accordingly, a difficult, specific prove goal might be “performing/ranking in the top 15%” of the relevant group completing the same task. It is very difficult to envision an individual would regularly set a specific, difficult avoid goal (e.g., “I want to avoid a score less than 90 on my exam”) compared to general, easy avoid goal (e.g., “I want to avoid failing the exam.”). This could be one reason why high PAGO is empirically associated with poor task performance (see Payne et al., 2007).

Consistent with personality and motivation theories such as goal hierarchy theory that suggest individual differences lead to goals which in turn lead to performance (e.g., Cropanzano et al., 1993) and Brett and VandeWalle’s (1999) previous research, it is proposed that individuals with a high PPGO will be more likely to set performance-prove goals than any other types of goals (i.e., learning or performance-avoid). Additionally, consistent with Atkinson’s (1964) achievement motivation theory and motive to succeed, it is proposed that prove goal content is positively related to task performance. Thus, prove goals mediate the relationship between PPGO and task performance. In other words, prove goals explain why PPGO is positively related to performance.

H2: PPGO will be positively related to performance-prove goal content.

H3: Performance-prove goal content will be positively related to task performance.

H4: Performance-prove goal content will mediate the PPGO-task performance relationship.

### **Self-Efficacy as a Moderator of the PPGO-Task Performance Relationship**

As previously mentioned, Dweck (1986) hypothesized that perceptions of skill level (similar to self-efficacy) enhance the performance goal-task performance relationship. Similarly, Nicholls (1984) predicted that perception of current ability (similar to self-efficacy) moderates the relationship between ego involvement (similar to PGO) and performance but not the relationship between task involvement (similar to LGO) and performance. Dweck (1986) suggested that learning and performance goal orientation can lead to one of two types of behavioral response patterns: adaptive or maladaptive. Adaptive (“mastery-oriented”) response patterns are characterized by persistence in the face of failure, higher levels of effort, low negative affect, choosing more challenging tasks, and strategy formulation. Dweck (1986) stated, “(these) patterns are those that promote the establishment, maintenance, and attainment of personally challenging and personally valued achievement goals (p. 1040). Conversely, maladaptive (“helpless”) patterns “are associated with a failure to establish reasonable, valued goals, to maintain effective striving toward those goals, or, ultimately, to attain valued goals that are potentially within one’s reach” (p.1040). Adaptive patterns lead to high levels of performance, whereas the maladaptive patterns lead to low levels of performance. Elliot and Dweck (1988) tested and found support for the following two hypotheses: 1) learning goals will lead to adaptive patterns regardless of perceived ability and 2) performance goals will lead to maladaptive patterns when perceived ability is low and mastery patterns when perceived ability is high.

Since the bifurcation of PGO, the self-efficacy moderator hypothesis has yet to be tested using a measure of self-efficacy consistent with Bandura’s (1982, 1997)

conceptualization, and related-research has yielded mixed findings (e.g., Kaplan & Midgley, 1997). Accordingly, this study seeks to test Dweck's (1986) original hypothesis using a measure of self-efficacy (see Brown, 2001 for a test using PGO and self-efficacy). PPGO is characterized as a disposition to demonstrate one's current ability and outperform others (norm referenced definition of success). If an individual's confidence in his/her ability is low, s/he is likely to engage in easier tasks, set easier goals, and/or not maintain the goals s/he set in the face of difficulty in order to successfully demonstrate his/her current ability. The overall effect is a lowering of performance due to the initial judgment(s) to engage in easier tasks, set easier goals, and not maintain goals vs. engaging in difficult tasks, setting difficult goals, and maintaining set goals. Additionally, these same individuals do not believe that their ability can be developed and therefore will engage in the maladaptive response pattern described above (see Dweck, 1986; Elliot & Dweck, 1988). In other words, simply wanting to demonstrate one's competence is not enough to perform at high levels (Dweck, 1986). High levels of confidence are also needed in conjunction with the desire to prove one's ability to perform at a high level.

H5: Self-efficacy will moderate the positive relationship between PPGO and task performance, such that higher levels of self-efficacy are associated with a stronger relationship between PPGO and performance.

### **Goal Structure as a Moderator of the PPGO-Performance Relationship**

Morton Deutsch (1949, 1962) was one of the first psychologists to develop theory about how competition among individuals can be described in terms of goal structures. Later, Johnson, Maruyama, Johnson, Nelson, and Skon (1981) more clearly articulated the goal structure construct as the degree to which the achievement of a goal by one person is

related to the achievement of a goal by another person. In a *competitive* goal structure, the attainment of the goal set by person A is inversely related to every other person's attainment of his/her goal performing the same task. For example, if a competitive goal structure were implemented in a laboratory sales simulation, then as one individual sets *and* reaches a goal to accumulate the most money in sales revenue out of everyone participating in the study, then everyone else *must* sell less. Conversely, a *non-competitive* goal structure is one where an individual's goal attainment is unrelated to any other individual's goal attainment. One person's accomplishment of selling more than any other participant does not necessarily prevent others from achieving their individual goals.

Goal structures are similar to resource dilemmas (see Dawes, 1980) in which there are usually competitive and cooperative conditions. The competitive condition in resource dilemmas is very similar to a competitive goal structure in that the accomplishment of "my" goal is inversely related to the accomplishment of "your" goal. The difference between resource dilemmas and goal structures is in the cooperative condition and non-competitive structure. In the cooperative condition of a resource dilemma, individuals' goals are perfectly positively related to one another (i.e., the realization of my goal is dependent on you realizing your goal). In contrast, there is no dependency between two individuals' goals in a non-competitive goal structure (i.e., the accomplishment of my goal is not contingent upon you accomplishing your goal). In other words, resource dilemmas do not have non-competitive/non-cooperative conditions.

In this study, goal structure is integrated with Atkinson's (1964) achievement motive theory. Again, Atkinson proposed that the relationship between motivation to

succeed and performance is moderated by situational characteristics such as reward structure. Normative evaluations lead to competition; this is consistent with Midgley, Kaplan, and Middleton's (2001) suggestion that as the degree of competition increases in an academic environment, so does the relative value of prove goals. Midgley et al. draw this conclusion based on the different results obtained from studies examining grade school and high school students vs. university students. They note that university classes often utilize a normative grading system where grade distributions are forced rather than absolute. Further, employment and graduate/professional school decisions are often based, at least in part, on grade point averages. Thus, university contexts are the most competitive learning environments. Indeed, competitive goal structures lead to other-referent performance evaluation due to the inverse relationship (but not zero-sum) between one individual's goal attainment and another person's goal attainment.

Tuckman (2003) examined the interaction between goal structure and self-regulatory belief on task performance. He defined self-regulatory belief as "the amount of self-confidence people have in their capability to complete a task" (p. 846). He trichotomized the data into three categories: "self-believers," "self-unsure," and "self-doubters." Even though he attempted to differentiate self-regulatory belief from self-efficacy conceptually, Tuckman (2003) operationalized self-regulatory belief by adopting Bandura's (1986) recommendations for measuring self-efficacy. Accordingly, self-efficacy is used in place of Tuckman's self-regulatory belief.

Tuckman predicted that individuals with a high level of self-efficacy would outperform those with a low level of self-efficacy. Furthermore, he believed that self-doubters would perform significantly worse in the competitive goal structure than in the

non-competitive goal structure. He argued that there are two primary reasons for these predictions. First, individuals are less likely to attempt self-regulation if they do not feel they have control over the outcomes. For instance, in rank order evaluation criteria, one's own performance is determined not only by their effort, but also how well other individuals perform the task. Second, self-doubters are more likely to report levels of competitive anxiety when confronted with a competitive structure (e.g., Williams, Frank, & Lester, 2000).

Tuckman found support for both of his hypotheses. Self-doubters in the competitive goal structure performed at the lowest levels when compared to any other self-regulatory belief/goal structure combination. Furthermore, self-believers performed at the highest levels, regardless of goal structure. Tuckman argued that these data support the idea that self-doubters in competitive structures feel the most threatened by the competitive structure and will not perform as well.

Since PPGO is associated with other-referent goals and subsequent performance evaluation in the sense that individuals want to demonstrate their ability to others, individuals with higher levels of PPGO are more likely to excel in situations where the criterion for performance success is normative. Therefore, it is predicted that PPGO will have a stronger relationship with performance in the competitive goal structure than in the non-competitive structure due to the tendency to set goals in other-referent terms.

H6: Goal structure will moderate the positive relationship between PPGO and task performance, such that the relationship is stronger when the goal structure is competitive rather than non-competitive.



It is further anticipated that highly prove-oriented individuals with a high level of self-efficacy in a competitive goal structure will outperform similar individuals in a non-competitive goal structure. In other words, PPGO will have the strongest relationship with performance when self-efficacy is high *and* when task performance is evaluated in a competitive goal structure.

H7: There will be a three-way interaction between PPGO, self-efficacy, and goal structure on performance, such that the highest levels of performance occur when individuals have a high level of PPGO, a high level of self-efficacy, and are in a competitive goal structure.

In addition to goal structure being a moderator of the PPGO-performance relationship, it is also proposed to be a moderator of the relationship between PPGO and goal expectancy. According to Hollenbeck and Klein (1987), expectancy of goal attainment leads to goal commitment. If success is defined as goal attainment and expectancy of goal attainment is low, then the motivation to demonstrate success is compromised. Expectancy of goal attainment is influenced by the opportunity to define success in terms relevant to prove-oriented individuals. The current conceptualization of goal orientation (e.g., Elliot, 2005) indicates that prove-oriented individuals define success in other-referent terms. Accordingly, prove-oriented individuals' goal expectancy is facilitated when they can compare their performance to other people's performance. Further, individuals who expect to attain their goal are more committed to their goal. As commitment increases, the relationship between goal difficulty and performance increases (Locke & Latham, 1990).

Given the importance of goal expectancy in the goal setting model, PPGO is proposed as a trait-like individual difference characteristic to be an integral part of the goal setting process. However, it is proposed that goal structure moderates the relationship between PPGO and goal expectancy (i.e., it is not hypothesized to have a main effect). A competitive goal structure will grant an individual with a high PPGO the opportunity to define success in other-referent terms. Conversely, a non-competitive goal structure could make it difficult to define success in other-referent terms and will likely decrease goal expectancy. In other words, the relationship might be not exist or even be negative. See Figure 3 for the fully integrated model of hypothesized relationships.

H8: Goal structure will moderate the relationship between PPGO and goal expectancy such that the relationship is positive when the goal structure is competitive rather than non-competitive.

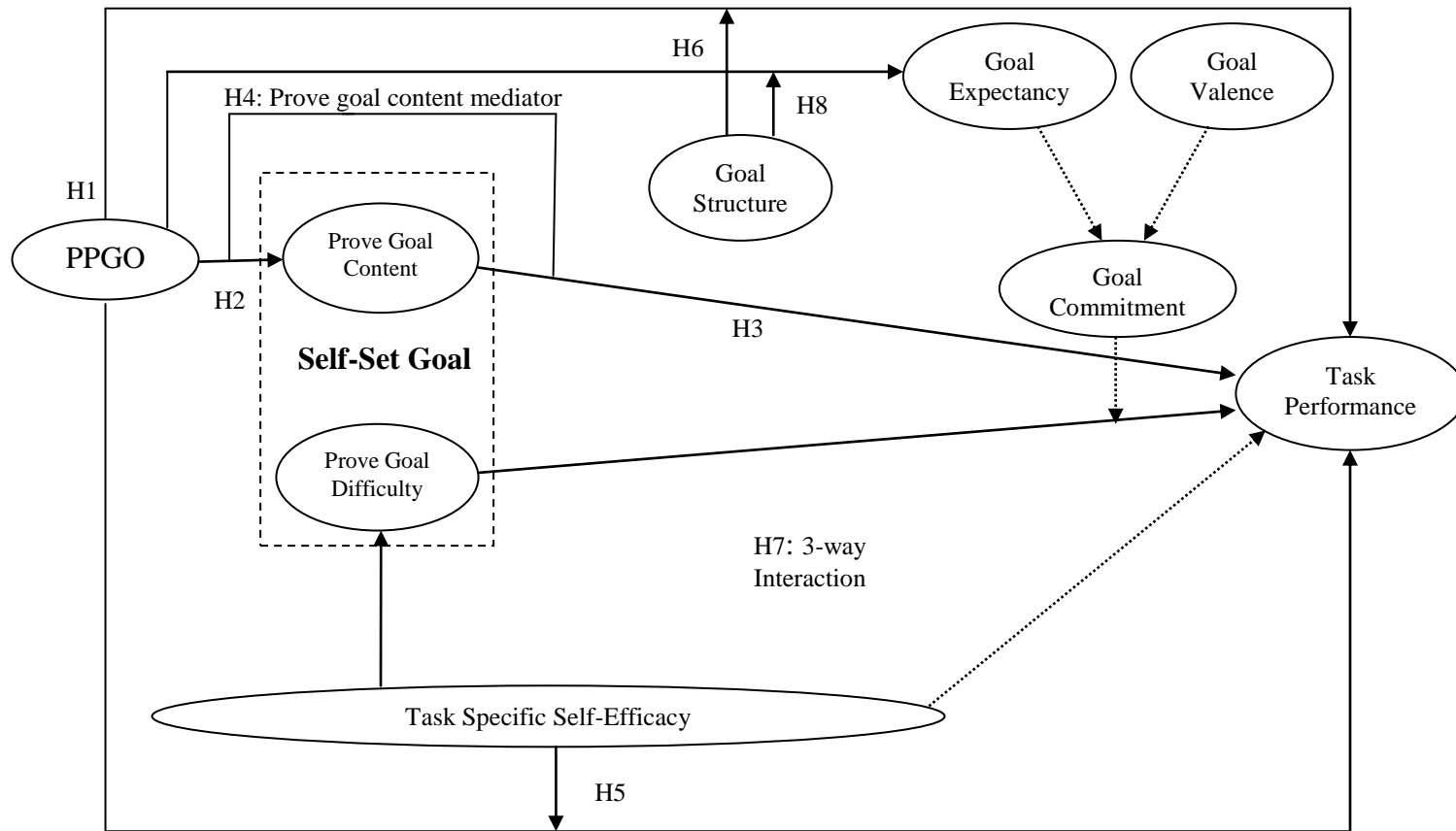


Figure 3. *Fully Integrated Model of Hypothesized Relationships Including Substantive Moderators for the Current Study.*

*Note.* Dotted arrows represent relationships not hypothesized in the current study. All hypothesized direct relationships are positive.

## **METHOD**

### **Participants**

The sample for this study was drawn from an undergraduate research methods course. The initial enrollment of undergraduate students in the focal research methods course at a large, southwestern university was 200. Of these 200 students, 160 provided informed consent to have their data analyzed for this study. Of this number, two participants who provided minimal study data dropped the class, so they were not included in the final sample. The remaining participants ( $N = 158$ ) completed at least some of the measures that consisted of a number of predictor variables in addition to relevant outcome variables (see below). The final sample ( $N = 109$ ) which completed at least one of the tasks (see below) was 77.1% female, 75.2% Caucasian, and 76.2% of the participants were either a sophomore or a junior classification. The average age of the participants was 20.02 ( $SD = 1.36$ ).

### **Experimental Task**

The experimental task for this study was an Item Generation Task (IGT). The task is a variation of Tuckman's (2003) voluntary homework system. The participants had the opportunity to complete the IGT and be awarded up to five extra credit points for any given exam period (four performance phases) based on the quality of the items they generated. Because participants were earning extra credit, they were not obligated to participate in any of the four opportunities. Correspondingly, some students did not participate at all ( $n = 49$ ) as reflected in Table 1. Most students participated at least three times, and many students participated four times ( $n = 45$ ;  $M = 2.53$ ,  $SD = 1.15$ ).

Table 1

*Means and Standard Deviations for Task Performance and Goal Expectancy within each Time Period and Condition*

DVs by Time Period	Task Performance		Goal Expectancy		<i>n</i>	Comp	NC	Frequency of Participation <sup>a</sup>				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				Zero	One	Two	Three	Four
Time 1	83.34	10.29	86.30	10.83	84	-	X	74	-	-	-	-
Time 2	82.10	6.88	79.93	14.46	72	X		86	-	-	-	-
Time 3	85.19	3.37	77.36	18.28	78	X		96	-	-	-	-
Time 4	81.68	7.05	80.08	16.62	89		X	82	-	-	-	-
IGTs Completed								49	16	17	31	45
Total <i>N</i> <sup>b</sup>	-	-	-	-	323	150	173		16	34	93	180
Task Performance <i>M</i>	-	-	-	-	-	83.71	82.49					
Task Performance <i>SD</i>	-	-	-	-	-	5.55	8.79					
Goal Expectancy <i>M</i>	-	-	-	-	-	78.59	83.10					
Goal Expectancy <i>SD</i>	-	-	-	-	-	16.55	14.41					

*Note.* X indicates the goal structure condition assigned to each time period. Comp = competitive structure.

NC = non-competitive structure. IGT = item generation task. <sup>a</sup> Denotes the number of times participants completed an IGT crossed by time period. <sup>b</sup> Denotes total number of observations for the within-subjects design.

Points for the IGT were awarded based on the quality of the five items the participants submitted. Each item was scored on six separate dimensions based on item-writing training materials developed by Arthur (1996; see Appendix B). Each assignment was initially scored on a 100-point scale. This score was then converted to the 5-point scale by multiplying the total score by .05 to determine the number of extra credit points earned. The original 100-point scores were retained for this study. The participants were also instructed that creating more than five items is advantageous for developmental purposes when preparing for each exam. However, they were not obligated to create more than five items. Finally, if the participants created more than five items, they were instructed that only the first five items were going to be graded for extra credit purposes.

### **Experimental Manipulation**

In order to manipulate goal structure, two sets of instructions were developed (see Appendix A). For the non-competitive condition, the participants [ $n = 84$  for time one (T1);  $n = 89$  for time four (T4)] were instructed that the extra credit points were going to be based on the raw scores alone (absolute distribution; everyone can receive the full points). They were further informed that they could receive between zero and five points for their items.

For the competitive condition, the participants [ $n = 72$  for time two (T2);  $n = 78$  for time three (T3)] were instructed that the extra credit points were to be awarded based on a forced distribution of the raw IGT scores. The distribution was forced by awarding five points (the maximum allowed) to the participants that ranked in the top quintile, regardless of their raw score. The remaining points were awarded to each subsequent quintile (e.g., four points to those in the 21<sup>st</sup> to 40<sup>th</sup> percentile, etc.).

**Manipulation check.** Two true/false manipulation check items were administered to determine if the non-competitive and competitive structures were perceived as such (see Appendix C).

### **Experimental Design and Procedure**

This study utilized a within-subjects design. Based on Keppel's (1991) argument, there are three advantages to utilizing a within-subjects design in this study. First, participants across the manipulations were equivalent on the individual difference factors measured throughout this study. In other words, everyone was their own control. Two, the subject error component is smaller in within-subjects design vs. a between-subjects design. Finally, utilizing a within-subjects design is efficient (all individuals receive all levels of the treatment), which also increases statistical power.

A number of individual difference measures were collected at various points throughout the semester. The first survey was administered once at the beginning of the semester (Individual Differences Measures; Appendix D). The second survey (Goal and Self-Efficacy Measures; Appendix E) was administered four times throughout the semester.

For the first exam period, individuals were informed of the extra credit opportunity approximately two to three weeks prior to the exam date. The course instructor gave them the instructions, and they were also posted on a teaching/instructional management and delivery website run through the university and controlled by the instructor. The first condition administered was the non-competitive condition. Within ten days of the first exam, participants completed the first set of Goal and Self-Efficacy Measures (hereafter

referred to as pre-IGT measures). On the morning of the first exam, they submitted the items they generated to the instructor.

Upon completion of the first IGT, individuals received performance feedback in the form of their awarded extra credit points. For the second exam period, approximately 10-days before the exam, participants again received instructions for the IGT; however, this time they received the competitive goal structure condition instructions. With the exception of the instructions given and the way the extra credit points for the assignments were allocated, the procedure for the subsequent task performance episodes were the same. For the third performance phase, the competitive goal structure was induced, followed by the non-competitive for the fourth performance phase. This reverse-counterbalancing technique was implemented to control for order effects.

### **Individual Differences Measures**

**Goal orientation.** In addition to information about the participants' gender, age, and ethnicity, VandeWalle's (1996) academic domain goal orientation instrument was used to assess PPGO and PAGO. Internal consistency (coefficient alpha) estimates for this sample were slightly lower than previous studies that included these two scales ( $\alpha = 0.67, 0.66$ , respectively). Sample items included, "It's important that others know that I am a good student" (PPGO), and "I would rather drop a difficult class than earn a low grade" (PAGO). Participants responded to each item on a 5-point agreement scale that ranged from strongly disagree (1) to strongly agree (5).

**Demographics.** Age, gender, university classification, and ethnicity were assessed at the beginning of the study (Time 0)



## **Self-Efficacy and Goal Measures**

**Task-specific self-efficacy.** An adapted 6-item version of Phillips and Gully's (1997) measure was used to measure TSE. These items were modified to ask participants about their self-efficacy for the IGT. Accordingly, each of the items referred to the "extra credit assignment". Sample items included, "I feel confident in my ability to perform well on the upcoming extra credit assignment" and "I have many concerns about my ability to do well on the upcoming extra credit assignment." These items were administered on four separate occasions during the semester, shortly before each exam (when the assignment was due). The participants responded to each item by using a 5-point agreement scale. The appropriate way to assess the reliability of this measure was to estimate alpha for each administration. The initial analysis for T1 suggested there was reason to eliminate two items. Alpha increased substantially (from 0.64 to 0.78) for this time period when the two items were removed from the measure. The same pattern emerged for each time period. The data suggested that the revised 4-item measure was internally consistent across the four time periods ( $\alpha = 0.72-0.82$ ).

**Goal content.** Each participant was asked the open-ended question: "What is your goal for the upcoming extra credit assignment?" This format allowed the individual to have different goal foci and did not limit them to setting a goal that focuses only on points earned. Previous studies that examined self-set goal level in a classroom context often directed individuals to set grade goals for upcoming exams, in effect dictating self-set goals to be performance-oriented rather than learning-oriented goals (e.g., Phillips & Gully, 1997).

Responses to the self-set goal item were coded by one graduate student and two trained, advanced undergraduate students as either prove (1) or not prove goals (0). Prove goals were further coded for the desired outcome: (a) *achievement*, emphasizing achieving a performance outcome on a task as an end state, or (b) *normative*, emphasizing outperforming others (on a task) as an end state. The outcome categories were based on Grant and Dweck's (2003) framework of performance-prove goals. Each rater was provided with the definition of an achievement and normative goal and provided with examples of each. Raters subsequently classified each prove goal into one of the following three categories: a) achievement outcome, b) normative outcome, or c) neither an achievement nor normative outcome. In instances where a participant provided more than one goal, the coders were instructed to code the first goal provided.

Given there were three coders, Fleiss' Kappa was used to determine if there was an acceptable level of agreement between raters. Interrater agreement was estimated for each of the four time periods and ranged from 0.83 to 1.0, indicating acceptable levels of agreement. Examples of goals on which there was disagreement appear in Table 2. Since the focus of this study is whether a goal was a performance-prove goal or not, the achievement and normative outcome goal categories were collapsed into one performance-prove goal category resulting in a dichotomous code of 0 = not performance-prove goal and 1 = performance prove goal. The distinction between achievement and normative was made primarily to further define what constituted a performance-prove goal vs. what does not constitute a performance-prove goal.

Table 2

*Examples of Goals on Which There was Disagreement and Final Codification of Each Goal*

Goal	Coded As	Single Dissenting Rater
1. My goal is to help my final grade by earning the extra points and by using this assignment as a study technique.	Prove/Ach	Non-Prove
2. To generate test questions that will award me the total five points and to learn the material more deeply than by just regurgitating it.	Prove/Ach	Non-Prove
3. To take advantage of an opportunity to both earn extra points on the exam but also to use this exercise as a way of becoming more prepared for the exam.	Prove/Ach	Non-Prove
4. My goal for the upcoming extra credit is to write strong questions that will earn me the maximum points available.	Prove/Ach	Non-Prove
5. Get all the credit, be in the top 20%.	Prove/Ach	Prove/Norm
6. To score in one of the upper two echelons - to get 4 or 5 pts.	Prove/Norm	Non-Prove

*Note.* Prove = prove performance goal, Non-Prove=not a prove performance goal, Norm = normative outcome, Ach = achievement outcome.

**Goal expectancy.** Participants' goal expectancy for their self-set goal was measured by having the participants evaluate their self-set goal and determine the likelihood they will attain the goal. They were asked, "What are the chances that you will attain this goal (the self-set goal) on a scale ranging from no chance (0%) to absolute certainty of success (100%). Please give your most realistic goal attainment expectancy." This assessment of expectancy is similar to Kernan and Lord's (1990) measure of goal expectancy.

## ANALYTICAL STRATEGY

Before testing the hypotheses, data were examined for outliers, frequency distributions were examined, and descriptive statistics such as means, standard deviations, and coefficient alphas were calculated. Hypotheses were tested using hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) and MacKinnon, Lockwood, Hoffman, West, and Sheets' (2002) joint significance approach to testing mediation.

Hypotheses 1 - 4 were tested using three separate *two-level* HLM models. HLM is a useful tool for analyzing nested data structures and, in this case, repeated measures data (Raudenbush & Bryk, 2002). In this study, observations were nested within individuals. Each individual could have as many as four observations of performance-prove goal content and task performance. Since PPGO was measured prior to the experimental procedure, it is considered a time-invariant covariate, which is appropriate since it is conceptualized as a stable, trait-like individual difference variable. Only the between-subjects variability for PPGO can be examined and therefore it was included in one of the Level 2 equations. Goal structure was included in the Level 1 equation to control for the competitive/non-competitive conditions. The following model (1) was used to test

Hypothesis 1:

$$\begin{aligned}\text{Level1:} \quad & Y (\text{Task Performance}) = b_0 + b_1 (\text{Goal Structure}) + e \\ \text{Level2:} \quad & b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + u \\ & b_1 = \gamma_{10} + u\end{aligned}\tag{1}$$

A positive, significant  $\gamma_{01}$  coefficient which represents the direct main effect of PPGO on task performance would indicate support for Hypothesis 1.

For Hypothesis 2 (PPGO will be positively related to performance prove content), the level one equation included performance-prove goal content as the dependent variable and goal structure as the level one control. The structure of model was as follows:

$$\begin{aligned}
 \text{Level 1:} \quad & Y (\text{Prove Goal Content}) = b_0 + b_1 (\text{Goal Structure}) + e \\
 \text{Level 2:} \quad & b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + u \\
 & b_1 = \gamma_{10} + u
 \end{aligned} \tag{2}$$

The test for support for Hypothesis 2 involved determining if the regression coefficient,  $\gamma_{01}$ , which represents the direct main effect of PPGO on performance-prove goal content, is significant or not. A positive, significant coefficient would indicate support for Hypothesis 2.

MacKinnon et al.'s (2002) joint significance approach for examining mediation was used to test Hypothesis 4. Hypothesis 3 was also evaluated with this model. This analysis utilized two separate sets of HLM equations. The first set of equations was used to regress prove goal content on PPGO and determine the significance of the  $X \rightarrow M$  effect (same as Hypothesis 2). The next set of equations was used to regress task performance on both PPGO and prove goal content to determine the  $X \rightarrow Y$  and  $M \rightarrow Y$  effects, respectively. The following set of equations was used to test this Hypothesis 4:

$X \rightarrow M$  Effect (same model as Hypothesis 2)

This effect was evaluated by examining the  $\gamma_{01}$  regression coefficient. A significant regression coefficient would indicate support for this step in the analysis.

$X \rightarrow Y$  (Hypothesis 1) and  $M \rightarrow Y$  Effects (Hypothesis 3)

$$\begin{aligned}
 \text{Level 1:} \quad & Y (\text{Task Performance}) = b_0 + b_1 (\text{Prove Goal Content}) + b_2 (\text{Goal} \\
 & \text{Structure}) + e
 \end{aligned}$$

$$\begin{aligned}
\text{Level 2:} \quad b0 &= \gamma00 + \gamma01 (\text{PPGO}) + u \\
b1 &= \gamma10 + u \\
b2 &= \gamma11 + u
\end{aligned} \tag{3}$$

A significant  $b1$  regression coefficient would indicate support for the  $M \rightarrow Y$  effect and would support Hypothesis 3 and a significant  $\gamma01$  regression coefficient would indicate support for the  $X \rightarrow Y$  effect. According to MacKinnon et al. (2002), if both the  $X \rightarrow M$  and  $M \rightarrow Y$  effects are jointly significant, an  $X \rightarrow M \rightarrow Y$  mediation effect is present and thus would support Hypothesis 4.

The fifth, sixth, and seventh hypotheses, which include task performance as the dependent variable, goal structure as a Level 1 predictor, and both PPGO, the mean TSE scores across all conditions, and the PPGO x TSE interaction term as Level 2 predictors, was tested with a two-level HLM model. The average TSE score is calculated in order to analyze TSE at the between-subjects level of analysis. Each of these was tested with the following model:

$$\begin{aligned}
\text{Level 1:} \quad Y (\text{Task Performance}) &= b0 + b1 (\text{GS}) + e \\
\text{Level 2:} \quad b0 &= \gamma00 + \gamma01 (\text{PPGO}) + \gamma02 (\text{TSE}) + \gamma03 (\text{PPGO} * \text{TSE}) + u \\
b1 &= \gamma10 + \gamma11 (\text{PPGO}) + \gamma12 (\text{TSE}) + \gamma13 (\text{PPGO} * \text{TSE}) + u
\end{aligned} \tag{4}$$

The fifth hypothesis posited a two-way interaction between PPGO and TSE. This was tested by examining the regression coefficient,  $\gamma03$ , which represents the interaction between PPGO and TSE at the between-subjects level of analysis.

Model 4 was also used to test Hypothesis 6, which posited a two-way cross-level interaction between PPGO and goal structure. A significant  $\gamma11$  regression coefficient

would indicate support for this hypothesis. These equations account for the two different goal structures (competitive vs. non-competitive) as a within-subjects Level 1 predictor and PPGO as a time-invariant covariate (between-subjects) Level 2 predictor.

Finally, the three-way interaction between PPGO, goal structure, and TSE was tested using Model 4. Support for Hypothesis 7 is determined by a significant  $\gamma_{12}$  coefficient.

A similar two-level HLM analysis that was used to test Hypothesis 8 which stated that goal structure moderates the relationship between PPGO and goal expectancy such that the relationship between PPGO and goal expectancy is positive in a competitive goal structure and negative in a non-competitive goal structure. The following two-level model was used to test Hypothesis 8:

$$\begin{aligned}
 \text{Level 1:} \quad & Y (\text{Goal Expectancy}) = b_0 + b_1 (\text{Goal Structure}) + e \\
 \text{Level 2:} \quad & b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + u \\
 & b_1 = \gamma_{10} + \gamma_{11} (\text{PPGO}) + u
 \end{aligned} \tag{5}$$

A significant  $\gamma_{11}$  would indicate support for Hypothesis 8.



## **RESULTS**

### **Manipulation Checks**

There were two items (see APPENDIX C) designed to evaluate the effectiveness of the goal structure manipulation. These were true/false items. These items were only administered for the 3<sup>rd</sup> (competitive) and 4<sup>th</sup> (non-competitive) time periods. The first item was expected to be answered “True” in the competitive condition and second item as expected to be answered “False” in the competitive condition. Although a very large majority answered in the affirmative, a small number of people failed the manipulation check items ( $n = 5$ ). These participants were eliminated from all of the analyses included in the study. Additionally, all of the numbers for sample size (including Table 1) mentioned in the previous section reflect these deletions for the sake of simplicity and clarity.

### **Descriptive and Inferential Statistics to test Hypotheses**

All study variable means, standard deviations, and intercorrelations at the within-person level of analysis are presented in Table 3. The same descriptive statistics for the between-persons level are presented in Table 4. Since HLM was used to test all of the study hypotheses, it was appropriate to estimate the intraclass correlation coefficient (ICC) for each of the dependent variables. Task performance ( $ICC = .05$ ), and goal expectancy ( $ICC = .42$ ) all varied between persons to such an extent that it was appropriate to use HLM to test all study hypotheses.

Table 3

*Means, Standard Deviations, and Intercorrelations of Variables at the Within-Subject Level*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Task Performance	83.05	7.48	--				
2. Goal Structure	0.46	0.50	.08	--			
3. Performance-prove Goal Content	0.67	0.47	-.03	.09	--		
4. Goal Expectancy	81.01	15.58	.07	-.14**	-.21**	--	
5. Task Specific Self Efficacy	3.75	0.64	.12*	-.21**	-.16**	.48**	--

*Note.*  $N = 323$ . Goal Structure coded 0 = non-competitive, 1 = competitive. Performance-Prove Goal Content coded 0 = not prove, 1 = prove. \*  $p \leq .05$ , \*\*  $p \leq .01$ .

Table 4

*Means, Standard Deviations, Reliabilities, and Intercorrelations at the Between-Subjects Level of Analysis*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Average Task Performance	82.89	5.60	--					
2. Performance-prove GO	3.15	0.74	.06	(.68)				
3. Performance-avoid GO	3.48	0.58	-.06	.31**	(.67)			
4. Average Task Specific Self-Efficacy	3.75	0.51	.22*	.00	-.14	--		
5. Average Goal Expectancy	80.98	12.52	.19*	.12	-.00	.53**	--	
6. Average Prove Goal Content	0.66	0.37	-.14	-.07	.12	-.15	-.23*	--

*Note.*  $N = 109$ . GO = goal orientation. Reliability estimates (Cronbach's alpha) are in parentheses along the diagonal where appropriate. \*  $p \leq .05$ , \*\*  $p \leq .01$

Finally, it should be noted that of the initial 158 participants who completed the individual difference (ID) measures at the beginning of the semester (Time 0), 109 participants completed all of the time zero ID measures and at least one of the IGTs along with the corresponding pre-IGT (e.g., self-efficacy) measures. Forty-five completed all four IGTs, so 64 completed one, two or three IGTs.

The hierarchical linear model (1) was used to test Hypothesis 1 which specified that PPGO would be positively related to task performance.

$$\begin{aligned}
 \text{Level 1:} \quad & Y (\text{Task Performance}) = b_0 + b_1 (\text{Goal Structure}) + e \\
 \text{Level 2:} \quad & b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + u \\
 & b_1 = \gamma_{10} + u
 \end{aligned} \tag{1}$$

The  $\gamma_{01}$  coefficient was statistically significant [ $t(107) = 2.27, p < .05$ ]. This indicates that there was a significant, positive relationship between PPGO and task performance.

The hierarchical linear model (Model 2) below was used to test Hypothesis 2 which specified that PPGO would be positively related to prove goal content.

$$\begin{aligned}
 \text{Level 1:} \quad & Y (\text{Prove Goal Content}) = b_0 + b_1 (\text{Goal Structure}) + e \\
 \text{Level 2:} \quad & b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + u \\
 & b_1 = \gamma_{10} + u
 \end{aligned} \tag{2}$$

The  $\gamma_{01}$  coefficient was not statistically significant [ $t(107) = -.96, n.s.$ ]. This indicates that the relationship between PPGO and prove goal content was not statistically significant. Again, adding goal structure to the Level 1 equation statistically controls for the goal structure manipulation effect.

MacKinnon et al.'s (2002) joint significance test was used to test Hypothesis 4 which stated that prove goal content would mediate the relationship between PPGO and

task performance. Also, Hypothesis 3 was tested using this process. The first part of this test (Predictor-Mediator) was the same as what was used to test Hypothesis 2, which was not a statistically significant result. According to MacKinnon et al. (2002), if one of the steps does not indicate a significant relationship, then the mediation hypothesis cannot be supported. However, the results are presented in order to show the test result of

Hypothesis 3. Model 3 was used to test H3 and H4 and is as follows:

$X \rightarrow Y$  (Hypothesis 1) and  $M \rightarrow Y$  Effects (Hypothesis 3). The joint test would include both of these effects being statistically significant (Hypothesis 4).

$$\text{Level 1: } Y (\text{Task Performance}) = b_0 + b_1 (\text{Prove Goal Content}) + b_2 (\text{Goal Structure}) + e$$

$$\text{Level 2: } b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + u$$

$$b_1 = \gamma_{10} + u$$

$$b_2 = \gamma_{11} + u \quad (3)$$

The  $b_1$  coefficient was examined to test Hypothesis 3. The results indicated there was not a statistically significant result [ $t(108) = -.02, n.s.$ ]. It is worth noting that the main effect for PPGO ( $\gamma_{01}$ ) was still statistically significant [ $t(107) = 2.39, p < .05$ ] in Model 3.

A fourth hierarchical linear model (Model 4) was created to test Hypotheses 5, 6, and 7. A summary of these results is presented in Table 5. In order to test Hypothesis 5, which was that task specific self-efficacy moderates the relationship between PPGO and task performance, the significance of the  $\gamma_{03}$  coefficient in Model 4 was examined.

Table 5

*HLM Results for the Proposed Moderators (Hypotheses 5-8)*

Variable	Coefficient	SE	df	<i>t</i>	<i>p</i>
DV = task performance					
Intercept	83.04	0.41	105	204.76	.000
PPGO Main Effect	0.81	0.53	105	1.52	.132
TSE Main Effect	2.78	0.68	105	4.08	.000
PPGO X Average TSE	-0.51	0.78	105	-0.66	.510
Goal Structure	1.32	0.90	105	1.46	.146
PPGO X Goal Structure	1.74	1.24	105	1.41	.162
TSE X Goal Structure	-2.16	1.79	105	-1.21	.229
PPGO X TSE X GS	1.21	2.41	105	0.50	.616
DV = goal expectancy					
Intercept	83.05	1.19	107	69.58	.000
PPGO Main Effect	4.11	2.00	107	2.05	.042
PPGO X Goal Structure	3.22	1.60	107	2.00	.048

*Note.* DV = dependent variable; PPGO = performance-prove goal orientation; TSE = average task-specific self-efficacy; GS = goal structure.

The results indicated that there was not a significant interaction [ $t(105) = -0.51, n.s.$ ] between average task specific self-efficacy and PPGO, failing to support Hypothesis 3.

$$\text{Level 1: } Y (\text{Task Performance}) = b_0 + b_1 (\text{GS}) + e$$

$$\text{Level 2: } b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + \gamma_{02} (\text{TSE}) + \gamma_{03} (\text{PPGO} * \text{TSE}) + u$$

$$b_1 = \gamma_{10} + \gamma_{11} (\text{PPGO}) + \gamma_{12} (\text{TSE}) + \gamma_{13} (\text{PPGO} * \text{TSE}) + u \quad (4)$$

Similar to the test of Hypothesis 5, Hypothesis 6 was tested by examining the cross-level interaction between PPGO and goal structure. Goal structure was hypothesized to moderate the relationship between PPGO such that a stronger, positive relationship is expected in the competitive condition. According to Snijders and Bosker (1999) a criterion of  $p < .10$  is acceptable when examining cross-level interactions. The direction of the relationship is consistent with the hypothesis; however, the  $\gamma_{11}$  coefficient was not statistically significant [ $t(105) = 1.74, p = 0.16$ ], failing to support Hypothesis 4. It is worth noting for descriptive purposes, however, that the slope was positive for the competitive condition and flat for the non-competitive condition. Further, the relationship between PPGO and task performance was significant in the competitive condition ( $\beta = .18, p < .01$ ), however one should not over interpret this result since the interaction term was not significant.

Finally, Hypothesis 7 was tested by examining the  $\gamma_{13}$  coefficient in the model presented above. The results indicated there was not a significant [ $t(105) = -0.09, n.s.$ ] three-way interaction among goal structure, task specific self-efficacy, and PPGO, so there is no support for Hypothesis 7.

Another hierarchical linear model (5) was used to test Hypothesis 8. It was expected that goal structure moderates the relationship between PPGO and goal

expectancy. Specifically, the relationship was expected to be positive in the competitive condition.

$$\begin{aligned}
 \text{Level 1:} \quad & Y (\text{Goal Expectancy}) = b_0 + b_1 (\text{Goal Structure}) + e \\
 \text{Level 2:} \quad & b_0 = \gamma_{00} + \gamma_{01} (\text{PPGO}) + u \\
 & b_1 = \gamma_{10} + \gamma_{11} (\text{PPGO}) + u
 \end{aligned} \tag{5}$$

The same  $p < .10$  criterion was used to evaluate the hypothesis test which included examining the  $\gamma_{11}$  coefficient. The results indicated that there was a significant interaction effect [ $t(109) = 3.22, p < .05$ ] and this interaction is in the hypothesized direction. The simple slope is stronger and positive for the competitive condition. Furthermore, when the interaction was probed, the relationship between PPGO and goal expectancy was statistically significant ( $\beta = .20, p < .05$ ) in the competitive condition. It was not statistically significant in the non-competitive condition. Thus, Hypothesis 8 is supported.

### **Exploratory and Ancillary Analyses**

As noted in the Introduction section, goal orientation researchers have not always differentiated PPGO from PAGO. Although it is implicit in this study that using a sound measure of PPGO will result in different effects than using a sound PAGO or PGO measure, there is no formal way to test a hypothesis regarding the operationalization of PGO and the differential effects observed when bifurcating the variable without testing the null. It was expected that the substantive moderators expected to moderate the PPGO-performance/expectancy relationships would not moderate the PAGO-performance/expectancy relationships.

When substituting PAGO for PPGO in the HLM Model 4 presented above, there were no significant effects for any coefficients in these equations (see Table 6).



Table 6

*HLM Results for the Proposed Moderators substituting PAGO for PPGO*

Variable	Coefficient	SE	df	t	p
DV = task performance					
Intercept	83.02	0.42	105	198.71	.000
PAGO Main Effect	0.10	0.67	105	0.15	.880
TSE Main Effect	2.87	0.74	105	3.86	.000
PAGO X TSE	-.30	0.97	105	-0.30	.762
Goal Structure	1.31	0.87	105	1.51	.135
PAGO X Goal Structure	1.15	1.75	105	0.65	.515
PAGO X TSE X GS	2.09	3.00	105	0.70	.486
DV = goal expectancy					
Intercept	80.69	1.05	142	76.63	.000
PAGO X Goal Structure	-4.02	2.09	287	-1.93	.055

*Note.* DV = dependent variable; PAGO = performance-avoid goal orientation; TSE = average task-specific self-Efficacy; GS = goal structure

However, there were no significant effects when PPGO was included either. Conversely, the moderating effect did change when examining goal expectancy as the dependent variable. When PAGO was substituted for PPGO in Model 5, the interaction effect was not statistically significant [ $t(107) = -0.85, n.s.$ ].

In an effort to further examine the mediation relationship where prove goal content mediates the relationship between PPGO and task performance, prove content was divided into its constituent sub-criteria. For this analysis both achievement and normative goal content information was retained to determine if either was significantly related to either PPGO or task performance and if the joint significance test criteria were met to support mediation. When the participants' self-set goals were coded, each goal could be categorized as having prove goal content if the goal focused on an absolute performance outcome as an end state (achievement outcome) or it focused on outperforming others as an end state (normative outcome). As previously mentioned, the coders were instructed to code the first goal stated if there were multiple stated goals, therefore a goal could not be coded as both an achievement and normative outcome (i.e., they were mutually exclusive). Two separate HLM analyses were conducted by substituting achievement and normative outcome goal content for prove goal content, respectively in both Models 2 and 3 presented previously.

The first step, where achievement outcome goal (M) was regressed on PPGO (IV), did not produce a statistically significant result [ $t(107) = -1.01, n.s.$ ].

The second and third steps of the mediation analysis were to evaluate two separate regression coefficients from one HLM model. Task performance was simultaneously regressed on the mediator and IV. Similar to the joint significance test for prove goal

content, goal structure was included in the Level 1 equation for all mediation analyses in order to control for the effects of the goal structure conditions.

The results of this analysis are presented in Table 7. Again, the goal of this analysis was to determine if achievement outcome goal mediated the PPGO-task performance relationship. PPGO was not significantly related to achievement outcome goal, but still remained a significant predictor of task performance. Additionally, achievement goal outcome was not significantly related to task performance. Therefore, there is no evidence for mediation.

The same analysis was conducted to determine if normative outcome goal content mediates the relationship between PPGO and task performance. These results were similar to the results obtained when substituting achievement outcome goal content for prove goal content. Again, goal structure was entered as a control in the Level 1 equation.

The results (see Table 8) of the first step did not support a relationship between PPGO and normative outcome goal content [ $t(107) = 0.33, n.s.$ ]. Also, there was not a significant relationship between normative outcome goal content and task performance [ $t(108) = 0.81, n.s.$ ]. Interestingly, there was a significant relationship between normative outcome goal content and goal structure indicating that more normative goals were set in the competitive goal structure condition than the non-competitive goal structure condition.

Table 7

*HLM Results for the Mediating Effect of Achievement Outcome Goal Content on the Performance Prove Goal Orientation-Task Performance Relationship*

Variable	Coefficient	SE	df	t	p
Step 1: M/DV = achievement outcome goal					
Intercept	0.49	0.15	107	3.30	.000
PPGO	-0.20	0.20	107	-1.01	.315
Goal Structure	-0.06	0.22	107	-0.30	.766
Step 2/3: DV = task performance					
Intercept	83.02	0.43	107	192.26	.000
PPGO	1.16	0.51	107	2.28	.024
Achievement Outcome	-0.33	0.81	108	-0.40	.688
Goal Structure	1.26	0.87	108	1.46	.147

*Note.* DV = dependent variable; M = mediator; PPGO = performance-prove goal orientation.

Table 8

*HLM Results for the Mediating Effect of Normative Outcome Goal Content on the Performance Prove Goal Orientation-Task Performance Relationship*

Variable	Coefficient	SE	df	t	p
Step 1: M/DV = normative outcome goal					
Intercept	-3.46	0.40	107	-8.66	.000
PPGO	0.09	0.27	107	0.33	.745
Goal Structure	2.56	0.63	108	4.07	.000
Step 2/3: DV = task performance					
Intercept	83.02	0.43	107	191.97	.000
PPGO	1.14	0.51	107	2.25	.026
Normative Outcome	1.08	1.34	108	0.81	.420
Goal Structure	1.16	0.87	108	1.34	.183

*Note.* DV = dependent variable; M = mediator; PPGO = performance-prove goal orientation.

## Power Analysis

No a priori power analyses were conducted for this study. A sample of convenience was pursued with the potential for 800 observations, although 800 observations were not expected. Calculating power for a repeated-measures design is tedious and requires extensive knowledge of how standard errors play a role in HLM models. Although there was a relatively large number of level 2 units, there was a relatively small number of observations per individual (Level 1; maximum = 4,  $M = 2.53$ ,  $SD = 1.15$ ). This limits the power to detect significant relationships as the number of observations within persons is indirectly related to the size of the standard errors. The relationship between standard errors and power is inverse; the smaller the standard errors, the larger the power. The observed power to detect a significant relationship between PPGO and task performance was calculated using the following equation:

$$(\text{effect size} / \text{standard error}) \sim (z_{1-\alpha} + z_{1-\beta}) = (z_{1-\alpha} - z_{\beta}) \quad (6)$$

This is a simple estimate presented in Snijders and Bosker (1999). The observed power based on this equation using the effect size ( $\beta = .11$ ), standard error (.51), and  $\alpha = .05$  was .08. This is due primarily to the observed effect size being so small relative to the standard error. As the number of observations within persons increase (again, substantially from  $n = 4$  which was the maximum for this study) the size of the standard errors is reduced yielding higher levels of power.

## DISCUSSION AND CONCLUSIONS

The current study attempted to address the lack of a consistent, positive relationship between PPGO and task performance despite sound theoretical grounds for such a relationship. Contrary to Payne et al.'s (2007) meta-analysis, PPGO was directly and positively related to task performance, albeit a relatively small effect size. This is likely due to the use of a sounder, less contaminated measure of PPGO. This relationship was probed further to see if there are important moderators and/or mediators of this relationship to explain when and why PPGO relates to task performance.

One of the study objectives was to determine if the direct, positive relationship between PPGO and task performance existed and if it was mediated by setting performance-prove goals (performance-prove goal content) as opposed to *not* setting performance-prove goals. The other primary objective was to determine the extent to which TSE and goal structure moderated the PPGO-task performance relationship. The results of this study suggest that there is a lack of compelling evidence for most of these proposed mediating and moderating relationships.

First, there was support for a positive relationship between PPGO and task performance. However, there was no support for a positive relationship between PPGO and performance-prove goal content; therefore performance prove goal content could not mediate the PPGO-task performance relationship. Furthermore, based on the supplemental analyses where prove goal content was decomposed, neither achievement outcome nor normative outcome goal content predicted task performance; nor did PPGO predict achievement or normative outcome goal content. Collectively, these results are

inconsistent with Brett and VandeWalle's (1999) results where they found that dispositional PPGO was positively related to both skill refinement and positive comparison goals (both of which were characteristic of prove goals). Moreover, refinement goals were in turn related to performance (Brett & VandeWalle, 1999). Some potential reasons for the lack of a relationship are that an individual's self-set goals are often so unique that it can be difficult to operationalize goal content. This is consistent with Austin and Vancouver's (1996) assertion that it is because of the idiographic nature of goals that a well-defined, holistic goal content taxonomy has not been developed. Another potential problem with the goal content analyses is that not one participant set a goal that was categorized as normative goal content in the first time period. This suggests that the number of normative goals set in subsequent time periods may have been elicited by the introduction of the competitive goal structure. This new structure may have prompted individuals who were previously not comfortable with setting prove goals to do so and subsequently perform poorly. This is indeed speculative and future research is needed to examine this possibility. Finally, students likely perceived the IGT as developmental and a beneficial study strategy. Therefore, they may have been more inclined to set learning goals. It should also be noted that, although not specifically coded for, very few students set performance-avoid goals.

Contrary to theory (Elliott & Dweck, 1988), past research (Brown, 2001), and expectation, self-efficacy did not moderate the relationship between PPGO and task performance. One possible explanation for the absence of this effect is a mismatch between the theory and the study design as well as operationalizations of the self-efficacy construct. Having confidence in one's ability to perform leads to higher levels of



performance is a theory explaining differences between individuals as opposed to within individuals. Stated another way, an individual with a low level of self-efficacy will perform at a lower level on average than an individual with a high level of self-efficacy. Although operationalizing self-efficacy by aggregating the four repeated measurements led to a significant main effect in this study which is consistent with numerous other studies (e.g., Stajkovic & Luthans, 1998), it could have contributed to the lack of relationship for the moderator analysis. It could be that aggregating four separate self-efficacy judgments to represent the between-subjects level of TSE in this study may not have been prudent (although this has been an accepted practice in previous empirical research; see Yeo & Neal, 2006), because the theory underpinning the hypothesized relationship is at the between-subjects level. Previous research has shown that the nature of the relationship between self-efficacy and performance changes depending on whether self-efficacy judgments are made at the between-subjects level (positive) or at the within-subjects level (negative or null) (see Vancouver, Thompson, Tischner, & Putka, 2002; Vancouver, Thompson, & Williams, 2001; Yeo & Neal, 2006).

Similarly, goal structure did not prove to be a substantive moderator of the PPGO-task performance relationship. Although it was not statistically significant, the relationship between PPGO and task performance was in the hypothesized (positive) direction in a competitive goal structure. Further, this relationship appears to trend negatively (or altogether non-existent) in the non-competitive environment. It may be the case that there is not enough power to detect such a small effect. Also, the goal structure manipulation may not have been strong enough, which I elaborate on more below.

Finally, there was no support for a three-way interaction between PPGO, self-efficacy, and goal structure. Collectively, (a) it appears that the positive relationship between PPGO and task performance is not attenuated by an individual's level of self-efficacy; (b) task performance levels *may* vary based on an individual's PPGO level in a competitive situation; and c) self-efficacy does not significantly moderate the PPGO-task performance relationship in either goal structure condition.

### **Exploratory Regression Analyses**

Since the theoretical underpinnings for the proposed relationships involving TSE are based on a between-subjects level of analysis, some exploratory regression analyses where self-efficacy would be treated as a pure between-subjects variable (within a given time period) were conducted, rather than an aggregate across time. This involved examining each time period separately and treating self-efficacy measured at a given time period as a between-subjects variable. A summary of the results is presented in Table 9.

For each time period, PPGO and TSE were entered into the regression model first and then the interaction term for these variables was entered in the second model. As can be seen in Table 9, these four separate regressions revealed that the interaction terms were not significant. Interestingly, the main effect for PPGO was significant ( $\beta = .33$  and  $\beta = .31, p < .01$ ) for the model in Time 2 (competitive condition) with and without the interaction term, respectively. This is consistent with what was hypothesized. However, the result was not statistically significant in the second competitive condition (Time 3).

Table 9

*Moderated Multiple Regression Results Predicting Task Performance for Times 1-4*

Predictor	T1			T2			T3			T4		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
DV: TP												
Model 1												
PPGO	1.03	1.44	.08	2.89	1.06	.31**	.53	.50	.12	-.52	1.04	-.05
TSE	3.67	2.04	.20	.86	1.12	.09	1.11	.53	.23*	.67	1.38	.05
<i>R</i> <sup>2</sup>	.04			.11*			.08*					
Model 2												
PPGO	1.46	1.44	.11	3.12	1.09	.33**	.58	.49	.13	-.83	1.05	-.09
TSE	4.27	2.03	.23*	.67	1.14	.07	.99	.54	.21	.26	1.39	.02
PPGOxTSE	-4.43	2.31	-.21	-1.53	1.47	-.12	-1.04	.72	-.16	3.80	2.33	.18
<i>R</i> <sup>2</sup>	.08			.12*			.10*			.01		
Δ <i>R</i> <sup>2</sup>	.04			.01			.03			.03		

*Note.* PPGO = performance-prove goal orientation; TSE = task-specific self-efficacy; TP = task performance; DV = dependent variable.  $N = 84$  for Time 1;  $N = 72$  for Time 2;  $N = 78$  for Time 3;  $N = 89$  for Time 4 \* $p < .05$ . \*\* $p < .01$ .

Finally, for Time 4, the model including both PPGO and TSE was not significant. Neither standardized regression coefficient was significant as well. However, in this model, the model improved upon adding the interaction term, approaching statistical significance ( $\Delta R^2 = .03, p = .081$ ). The interaction was in the hypothesized direction. As TSE increases, so does the strength of the relationship between PPGO and task performance (in the positive direction).

A few things can be concluded from these individual moderator regressions. First, the focal IV, PPGO, did not consistently predict performance across the two competitive conditions. Second, self-efficacy did not consistently predict performance across the four time periods. Third, self-efficacy did not moderate the PPGO-task performance relationship within any of the four time periods. Thus, for this analysis, self-efficacy did not moderate the PPGO-task performance relationship at the between-subjects level of analysis which is consistent with the previously presented HLM analyses. Again, no consistent patterns emerged across the four time periods

In addition to the two primary study objectives listed above, there were two secondary study objectives. The first was to examine PPGO in the larger context of the goal setting process. Hollenbeck and Klein's (1987) expectancy of goal attainment construct was hypothesized to be conditionally affected by PPGO. Specifically, goal structure was hypothesized to moderate the relationship between PPGO and goal expectancy. The relationship was hypothesized to be positive in a competitive structure. The results of the HLM analysis supported this hypothesis. Individuals who are more likely to define success in other-referent terms, want to demonstrate their ability, and are generally interested in how others' perceive their ability are more likely to expect to

achieve the specific goal they set in a competitive goal structure. Conversely, there is no moderating effect in the non-competitive goal structure.

The final study objective was to test the extent to which the bifurcation of *PGO* into PPGO and PAGO dimensions leads to differential effects when examining the proposed moderator effects in the current study. Using the task performance moderation analyses, results for PPGO were contrasted to results for PAGO. Self-efficacy and goal structure did *not* moderate the PAGO-task performance relationship. However, these relationships were not significant for PPGO either. Thus, these results do not lend support to the idea that there are different patterns of moderated relationships for PPGO and PAGO with task performance, when self-efficacy and goal structure are tested as moderators.

The differentiation between PPGO and PAGO was tested further on the moderation analysis where goal structure was expected to moderate the PPGO-goal expectancy relationship. Again, the expectation was that the PAGO-goal expectancy relationship would not be moderated by goal structure once PPGO was substituted with PAGO. This was indeed the case. Again, PPGO-goal expectancy was moderated by goal structure while the PAGO-goal expectancy relationship was not. These results further support the bifurcation of PGO into PPGO and PAGO dimensions.

### **Theoretical Implications**

There are a number of implications for further theory development. Most importantly, the integration of achievement goal theory and goal setting theory extends our understanding of the goal setting process as a whole. When individuals are embedded in a competitive goal structure, there is a positive association between PPGO and goal

expectancy. Goal expectancy is considered an important antecedent to goal commitment (Klein et al., 1999; Wofford et al., 1992), which has been demonstrated to be a moderator of the goal level-task performance relationship (Klein et al., 1999). One oversight in the goal setting literature has been the identification of consistent individual difference predictors of key constructs such as expectancy of goal attainment (Locke, Shaw, Saari, & Latham, 1981). Based on the results of this study, what may be more important to explaining variability in intermediate goal setting constructs like goal expectancy is the interaction between individual difference characteristics such as PPGO and situational characteristics such as goal structure. Thus, future empirical examinations of goal expectancy should consider incorporating these variables.

It is important to distinguish between goal setting outcomes and the goal setting process. Regarding goal expectancy, the focus is on goal setting outcomes (i.e., what happens between the goal and performance). Conversely, the mediation hypothesis tested in this study focuses on the link between the individual and goal setting itself (the process of setting the goal). Although there seems to be some sound theoretical grounds for PPGO influencing whether or not an individual sets a performance prove goal, there was no evidence from the current study to support such a relationship. The lack of a positive relationship between PPGO and prove goal content is inconsistent with Brett and VandeWalle's (1999) study where they found that dispositional PPGO was positively related to both skill refinement and positive comparison goals (both of which were characteristic of prove goals). Although there was evidence for a direct, positive relationship between PPGO and task performance when controlling for goal structure *and* prove goal content, this relationship is relatively weak. This result is somewhat consistent

with two of the studies mentioned previously (Heimbeck et al., 2003; Hendricks & Payne, 2007) and is inconsistent with Payne et al.'s (2007) meta-analysis. Again, this is likely due to the sound PPGO measure.

One additional problem for this study that has been recently highlighted in the literature is the lack of construct validity of achievement goal constructs such as PPGO. Hulleman, Schrager, Bodmann, and Harackiewicz (2010) conducted a meta-analysis evaluating the current state of construct validity in achievement goal research. They found evidence that achievement goal measures that included a majority of normative-based items were positively related to performance outcomes. The authors claim that there is a lack of conceptual clarity not only for the PPGO construct, but also all GO dimensions. They found that many PPGO measures contain items that assess affect and appearance, which they considered goal-irrelevant. This is important for the current study because VandeWalle's (1997) measure does not include normative-based items. In fact, they consider this measure's items largely goal-irrelevant in that the items focus on appearance rather than goals themselves. They further argue based on their analyses that a more meaningful pattern of results emerges when measures of PPGO contain goal-relevant items. Perhaps, and this is speculative, a measure with more goal-relevant items could lead to a relatively stronger effect. Future studies should avoid using PPGO measures that contain goal-irrelevant language by using those that include normative based items (again, especially for PPGO).

### **Applied Implications**

There are a few applied implications for this study, as well. First, the results suggest a different pattern of relationships for PPGO vs. PAGO when examining goal

expectancy as the dependent variable and goal structure as the moderator. Based on these results, if practitioners are interested in conducting assessments of GO, they should rely on measures that assess both PPGO and PAGO dimensions. Additionally, since the results suggest there is a positive relationship between PPGO and goal expectancy in a competitive goal structure and conversely a non-existent relationship in the non-competitive goal structure, there are some additional applications practitioners might consider. When it comes to situations where goal expectancy, whether in a training or performance context, is of interest, practitioners may want to assess individual PPGO and PAGO. In a highly competitive environment, individuals with lower levels of PPGO may need to be advised on the importance of setting difficult, but realistic, and specific goals in order to have realistic levels of goal expectancy. These more realistic expectations are more likely to lead to higher levels of goal commitment which in turn lead to higher performance levels when coupled with difficult and specific goals.

### **Limitations and Future Research**

In addition to the limitations mentioned previously, there are a number of other limitations to be acknowledged in the current study. One potential limitation was the use of a repeated measures/within-subjects design for the manipulation of goal structure. Although it was useful for the context in which it was conducted (it was a highly practical decision/sample of convenience) and allowed a high level of control for the between-subjects factor PPGO, it may have been better to treat goal structure as a between-subjects factor. The reason being is that it would have eliminated any order effects. Although not necessarily an issue in and of itself, the manipulation may have impacted the participants' content of their self-set goal. The contrast from the non-competitive condition to the



competitive one may have driven individuals to self-select performance prove goals. If there was a between-subjects manipulation (e.g., different sections of the same course), then the contrast between competitive and non-competitive conditions would not have been present for each individual participant. In such a design, self-efficacy could also be treated as a pure between-subjects variable, rather than an aggregate of four separate judgments, which would be more consistent with the theoretical underpinnings mentioned previously. Again, since the theory stipulates that a positive relationship exists between self-efficacy and task performance and that self-efficacy should moderate the relationship between PPGO and task performance, both at the between-subjects level of analysis, then it may be beneficial to measure both at the between-subjects level.

Another limitation was the voluntary nature of the item generation task (IGT) and the fact that participants may have opted out because of the way the assignment was graded. Given the within-subjects nature, an individual could complete the IGT all four times ( $n = 45$ ; high experience) or just one time ( $n = 16$ ; low experience). In fact, and most importantly, an individual could have intentions of completing the IGT, but then realize that the grading was a forced distribution and then decide not to participate. This could have been a serious systematic problem because the very constructs of interest in this study (PPGO, TSE, and goal expectancy) may have contributed to them not volunteering. This could be avoided by conducting a laboratory study where participants have less discretion over participation in the various conditions within the study. It would be interesting to examine the extent to which PPGO and self-efficacy predict engagement in voluntary tasks. Likewise, it would be interesting to examine if these same variables predict non-task related behaviors in organizations, such as organizational citizenship

behaviors. Although there are some drawbacks mentioned here, this field study did have advantages in that the participants' actions had real-world consequences which should have increased their motivation and therefor the generalizability of the results. Another way to address the participation problem would be to use exam scores as the criterion and also include the goal structure manipulation.

The voluntary nature of the task may have caused one additional problem. The motivation to complete the IGT likely varied from individual to individual (and from time to time) because of his/her overall standing in the course. For example, an individual who is close to an A grade for the course might see the IGT as an excellent opportunity to boost his/her grade into the A range. Conversely, an individual with a low to mid B might not see the task as an attractive option because even if they do well on the assignment, s/he will not increase his/her overall standing in the course.

Finally, another concern was the reliabilities of the PPGO and PAGO measures which were much lower than estimates in past research. Likewise, the self-efficacy measure had a low level of reliability, but this was partially addressed by eliminating two items. These more modest levels of reliability could have contributed to the lack of significant findings and support for the hypothesized relationships. Future studies should seek to maximize reliability, perhaps with alternative measures.

In addition to the suggestions mentioned previously, there are a few other suggestions that may help in this line of research. One potential improvement would be to increase the strength of the goal structure manipulation. Specifically, future studies that include a goal structure manipulation could make the outcomes zero-sum in order to make the competitive condition highly competitive. Although the current study likely had an

adequate manipulation, an even stronger treatment may yield significant findings.

Similarly, this task was a relatively low-stakes assessment and therefore may not have had the same effect that a higher stakes assessment would have had.

A final consideration would be to completely separate the two processes of mediation and moderation in this study. When examining the impact of PPGO on performance prove goal content and its subsequent impact on task performance, it may be an improvement to avoid strong manipulations that could overpower the impact of PPGO on prove goal content or drive individuals to avoid certain types of goals altogether. If the objective is to understand why PPGO predicts performance via the prove goal content mediator, then it may be best to not introduce any other strong situational variables which might confound the mediated relationship of interest.

## **Conclusions**

This study was designed to determine if (a) goal structure and self-efficacy moderate the PPGO-task performance relationship and (b) to what extent PPGO is an integral part in the goal setting process via constructs such as goal content and goal expectancy. The impetus for this line of research was largely due to a call in the achievement goal literature to search for moderators of the PPGO-task performance relationship (e.g., Payne et al., 2007; VandeWalle et al., 2001). As expected, PPGO was positively related to task performance when controlling for the effects of goal structure. Further, neither goal structure nor TSE moderated this relationship. However, PPGO interacted with goal structure when predicting goal expectancy, such that in competitive situations, the relationship between PPGO and goal expectancy was much stronger than in non-competitive situations. Contrary to expectation, performance-prove goal content did

not mediate the PPGO-task performance relationship. These results do not eliminate the possibility of other substantive moderators of the PPGO-task performance relationship. Researchers should continue to rely on theory and past research to determine if there are moderators of this relationship.

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## APPENDIX A

Instructions for Goal Structure Manipulation: Time One and Four – Non-competitive

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### Extra Credit Assignment Instructions Exam 1

The extra credit assignment consists of generating multiple-choice test items for each exam period and answering a set of questions about your experiences generating these questions. Ideally, generating questions will not only allow you to earn extra credit points, but facilitate your learning of the material. You will notice there are different types of items you can generate that require a deeper level of processing, further enhancing your retention of this information. The maximum number of points you can earn is **five points for each exam**. There is a possibility that I will include some of the best items on the cumulative final exam.

#### Assignment

First, complete a brief survey about your goals and self-efficacy with regard to this assignment. This is a required portion of the extra credit assignment. You will not be awarded extra credit points if you do not complete the survey. The data from the survey may be used this semester or in future semesters for the laboratory research project. The survey must be completed between January 31 and February 7 (for Time 1). Access the survey here:

Insert survey link

Make sure you complete the entire survey – when there is a “Done” tab at the bottom and click the “Done” tab. Thanks.

Research suggests the more items you generate, the better the quality of your items, so you may want to generate more than 5 items. Select your 5 best items and put those first. Please also submit any other items (including partial items) that you write. All items are due the day and time of the exam: February 7, 9:35am.

Below are the guidelines that will be used to evaluate the quality of your items. They are also provided to help you with generating items.

#### General Item-Writing (Procedural)

1. Items can be classified into three categories: a) knowledge of terminology and definitions; b) understanding of principles and concepts; and c) application of knowledge to new situations. The latter two kinds of questions are more difficult to write and therefore will be worth more points than the first kind.

2. Every question should have at least 3 options; however, 4 options are preferable.
3. Avoid using a complex multiple choice format (e.g., Two cities in Texas are \_\_\_\_\_ and \_\_\_\_\_).
4. Use correct grammar and spelling.

### **General Item-Writing (Content Concerns)**

1. Base each item on an educational or instructional objective (e.g., generating hypotheses). Focus on a single problem or concept.
2. Avoid cuing one item with another; keep items independent of one another. Avoid using verbatim phrasing and language from the textbook or other materials. Item content should include important and significant material; avoid trivial material.
3. Collectively, your items should cover the entire content domain for an exam. In other words, do not write all of your items to cover one chapter. Put the chapter covered by an item in parentheses at the end of the item stem. Key the correct response with an asterisk.

### **Stem Construction**

1. State the stem in either question form or completion form.
2. It should be possible to answer the question without referring to the alternatives.
3. Avoid using excessive verbiage in the stem.
4. Word the stem positively; avoid negative phrasing. If you must use negations, make them salient (**CAPS and BOLD**).
5. **NEVER** use a double negation.
6. Include the central idea and most of the phrasing in the stem.

### **General Option Development**

1. Generate 3 or 4 options.
2. Keep options independent of each other; options should not overlap in content.
3. Avoid the use of opposites of the correct option.
4. Keep the length of options fairly consistent.
5. Avoid the use of “all of the above” and “none of the above.”
6. Do not use “never” and “always”.
7. Avoid the use of “I do not know”.
8. Avoid the use of distractors (incorrect responses) that can clue test-wise test takers; for example, words that sound the same, absurd options, formal prompts, semantic clues, faulty grammatical construction, or differential length.
9. Stem and options should be grammatically consistent.

### **Correct option development**

1. Position the correct option so that it appears about the same number of times in each possible position. Positioning should be random and not systematic.
2. Avoid the use of items with multiple correct options (e.g., “A and B are both correct”).
3. Make sure there is clearly one best answer.
4. Mark the correct response with an asterisk.

**Distractor Development**

1. Use distractors that are true statements but do not correctly answer the item.
2. Use plausible distractors; avoid illogical distractors.
3. Avoid the use of humor when developing distractors.

Scoring information is provided below. The overall assignment will be graded on a 100-point scale. Your score on this assignment will be multiplied by .05 points and added to the first exam.

General Item-Writing (Procedural)	25 points
General Item-Writing (Content Concerns)	20 points
Stem Construction	15 points
General Option Development	15 points
Correct Option Development	10 points
Distractor Development	10 points



## Extra Credit Assignment Instructions

### Exam 2

The extra credit assignment once again consists of generating multiple-choice test items for the upcoming exam (Exam 2) and answering a set of questions about your experiences generating these questions. Ideally, generating questions will not only allow you to earn extra credit points, but facilitate your learning of the material. You will notice there are different types of items you can generate that require a deeper level of processing, further enhancing your retention of this information. The maximum number of points you can earn is **five points for the exam**. There is a possibility that I will include some of the best items on the cumulative final exam.

#### Assignment

First, complete a brief survey about your goals and self-efficacy with regard to this assignment. This is a required portion of the extra credit assignment. You will not be awarded extra credit points if you do not complete the survey. The data from the survey may be used this semester or in future semesters for the laboratory research project. The survey must be completed between February 27 and March 6 (for Time 2). Access the survey here:

Insert Survey Link

Make sure you complete the entire survey – when there is a “Done” tab at the bottom and click the “Done” tab. Thanks.

Research suggests the more items you generate, the better the quality of your items, so you may want to generate more than 5 items. Select your 5 best items and put those first. Please also submit any other items (including partial items) that you write. All items are due the day and time of the exam: March 6, 9:35am.

**\*\*There is one significant difference between this extra credit assignment and the first assignment. For the first assignment, points were awarded based on meeting the predetermined criteria below. In theory, all individuals could have been awarded 5 full points for their items. Conversely, extra credit points are going to be awarded in a different manner for assignment two. Each set of items will be graded exactly the same as before. However, once the grades are calculated, every assignment will be ranked from top scorer to bottom scorer. Then, the extra credit points will be awarded as follows:**

Top 20%	5 points
60 <sup>th</sup> to 79 <sup>th</sup> percentile	4 points
40 <sup>th</sup> to 59 <sup>th</sup> percentile	3 points

20 <sup>th</sup> to 39 <sup>th</sup> percentile	2 points
Bottom 20 %	1 point

**This is an example of a normative grading system. It is designed to create competition for the extra credit points among the students. \*\***

Below are the guidelines that will be used to evaluate the quality of your items. They are also provided to help you with generating items.

### **General Item-Writing (Procedural)**

1. Items can be classified into three categories: a) knowledge of terminology and definitions; b) understanding of principles and concepts; and c) application of knowledge to new situations. The latter two kinds of questions are more difficult to write and therefore will be worth more points than the first kind.
2. Every question should have at least 3 options; however, four options are preferable.
3. Avoid using a complex multiple choice format
  - a. (e.g., Two cities in Texas are \_\_\_\_\_ and \_\_\_\_\_.).
4. Use correct grammar and spelling.

### **General Item-Writing (Content Concerns)**

1. Base each item on an educational or instructional objective (e.g., generating hypotheses). Focus on a single problem or concept.
2. Avoid cuing one item with another; keep items independent of one another. Avoid using verbatim phrasing and language from the textbook or other materials. Item content should include important and significant material; avoid trivial material.
3. Collectively, your items should cover the entire content domain for an exam. In other words, do not write all of your items to cover one chapter. Put the chapter covered by an item in parentheses at the end of the item stem. Key the correct response with an asterisk.

### **Stem Construction**

1. State the stem in either question form or completion form.
2. It should be possible to answer the question without referring to the alternatives.
3. Avoid using excessive verbiage in the stem.
4. Word the stem positively; avoid negative phrasing. If you must use negations, make them salient (**CAPS and BOLD**).
5. **NEVER** use a double negation.
6. Include the central idea and most of the phrasing in the stem.

### **General Option Development**

1. Generate 3 or 4 options.
2. Keep options independent of each other; options should not overlap in content.
3. Avoid the use of opposites of the correct option.
4. Keep the length of options fairly consistent.

5. Avoid the use of “all of the above” and “none of the above.”
6. Do not use “never” and “always”.
7. Avoid the use of “I do not know”.
8. Avoid the use of distractors (incorrect responses) that can clue test-wise test takers; for example, words that sound the same, absurd options, formal prompts, semantic clues, faulty grammatical construction, or differential length.
9. Stem and options should be grammatically consistent.

### **Correct option development**

1. Position the correct option so that it appears about the same number of times in each possible position. Positioning should be random and not systematic.
2. Avoid the use of items with multiple correct options (e.g., “A and B are both correct”).
3. Make sure there is clearly one best answer.
4. Mark the correct response with an asterisk.

### **Distractor Development**

1. Use distractors that are true statements but do not correctly answer the item.
2. Use plausible distractors; avoid illogical distractors.
3. Avoid the use of humor when developing distractors.

Scoring information is provided below. The overall assignment will be graded on a 100-point scale, ranked within the distribution of all assignments turned in, and then divided into one of five quintiles described above. 1-5 points will be added to the second exam.

General Item-Writing (Procedural)	25 points
General Item-Writing (Content Concerns)	20 points
Stem Construction	15 points
General Option Development	15 points
Correct Option Development	15 points
Distractor Development	10 points

## APPENDIX B

### Item Generation Task Grading Rubric

#### General Item-Writing (Procedural)

1. Items can be classified into three categories: a) knowledge of terminology and definitions; b) understanding of principles and concepts; and c) application of knowledge to new situations. The latter two kinds of questions are more difficult to write and therefore will be worth more points than the first kind.
2. Every question should have at least 3 options; however, four options are preferable.
3. Avoid using a complex multiple choice format
  - a. (e.g., Two cities in Texas are \_\_\_\_\_ and \_\_\_\_\_).
4. Use correct grammar and spelling.

#### General Item-Writing (Content Concerns)

1. Base each item on an educational or instructional objective (e.g., generating hypotheses). Focus on a single problem or concept.
2. Avoid cuing one item with another; keep items independent of one another. Avoid using verbatim phrasing and language from the textbook or other materials. Item content should include important and significant material; avoid trivial material.
3. Collectively, your items should cover the entire content domain for an exam. In other words, do not write all of your items to cover one chapter. Put the chapter covered by an item in parentheses at the end of the item stem.

#### Stem Construction

1. State the stem in either question form or completion form.
2. It should be possible to answer the question without referring to the alternatives.
3. Avoid using excessive verbiage in the stem.
4. Word the stem positively; avoid negative phrasing. If you must use negations, make them salient (**CAPS and BOLD**).
5. **NEVER** use a double negation.
6. Include the central idea and most of the phrasing in the stem.

#### General Option Development

1. Generate 3 or 4 options.
2. Keep options independent of each other; options should not overlap in content.
3. Avoid the use of opposites of the correct option.
4. Keep the length of options fairly consistent.
5. Avoid the use of “all of the above” and “none of the above.”
6. Do not use “never” and “always”.
7. Avoid the use of “I do not know”.

8. Avoid the use of distractors (incorrect responses) that can clue test-wise test takers; for example, words that sound the same, absurd options, formal prompts, semantic clues, faulty grammatical construction, or differential length.
9. Stem and options should be grammatically consistent.

### **Correct Option Development**

1. Position the correct option so that it appears about the same number of times in each possible position. Positioning should be random and not systematic.
2. Avoid the use of items with multiple correct options (e.g., “A and B are both correct”).
3. Make sure there is clearly one best answer.
4. Mark the correct response with an asterisk.

### **Distractor Development**

1. Use distractors that are true statements but do not correctly answer the item.
2. Use plausible distractors; avoid illogical distractors.
3. Avoid the use of humor when developing distractors.

Scoring information is provided below. The overall assignment will be graded on a 100-point scale. Your score on this assignment will be multiplied by .05 points and added to the first exam.

General Item-Writing (Procedural)	25 points
General Item-Writing (Content Concerns)	20 points
Stem Construction	15 points
General Option Development	15 points
Correct Option Development	15 points
Distractor Development	10 points

## **APPENDIX C**

### **Goal Structure Manipulation Check Items**

1. My grade on **THIS** extra credit assignment depends on how well others do on this assignment.

TRUE/FALSE

2. My grade on **THIS** extra credit assignment is independent of other students' grades on this assignment.

TRUE/FALSE

## APPENDIX D

### Individual Differences Measures

1. What is your gender?      *Male*                      *Female*
2. What is your age? \_\_\_\_\_
3. What is your ethnic origin?      *American Indian/Alaskan Native*      *Asian*      *Hispanic*  
   *Pacific Islander*      *Black (Not Hispanic)*      *White (Not Hispanic)*      *Mixed Heritage*  
   *Other*

This set of questions asks you to describe how you feel about each of the following statements. Please use the scale shown below to make your ratings.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

#### Factor I: Prove Orientation

1. It's important that others know that I am a good student.
2. I think that it's important to get good grades to show how intelligent you are.
3. It's important for me to prove that I am better than others in the class.
4. To be honest, I really like to prove my ability to others.

#### Factor II: Avoid Orientation

5. I enroll in courses in which I feel that I will probably do well.
6. I would rather drop a difficult class than earn a low grade.
7. I would rather write a report on a familiar topic so that I can avoid doing poorly.
8. I am more concerned about avoiding a low grade than I am about learning.
9. I prefer to avoid situations in classes where I could risk performing poorly.

## APPENDIX E

### Goal and Self-Efficacy Measures

#### Self-Efficacy

This set of statements asks you about your confidence in your ability to do well on the upcoming extra credit assignment (E1 – E4) for Test (1 – 4): Generating 5 test items. Please think about this assignment when completing these items. There are no right or wrong answers to these questions.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

1. I feel confident in my ability to perform well on the upcoming extra credit assignment.
2. I don't feel that I am as capable of performing as well on the upcoming extra credit assignment as other students (R).
3. I would have to study for a long time to have an outside chance to do well on the upcoming extra credit assignment. \*
4. I think that my performance will be more than adequate on the upcoming extra credit assignment.\*
5. On average, other students are probably not as capable of doing as well on the upcoming extra credit assignment as I am.
6. I have many concerns about my ability to do well on the upcoming extra credit assignment (R).

\*Item dropped to improve reliability and factor structure

#### Self-set Goal and Expectancy Measure

**Now, using the following definition below, answer all of the subsequent items that follow.**

**A GOAL is an “internal representation of desired states, where states are broadly construed as outcomes, events, or processes” (Austin & Vancouver, 1996, p. 338).**

What is your goal for the extra credit assignment when you first thought of the extra credit assignment?\_\_\_\_\_

Next, on a probability of success scale ranging from no chance (0%) to absolute certainty of success (100%), rate your expectancy to achieve your goal.\_\_\_\_\_